

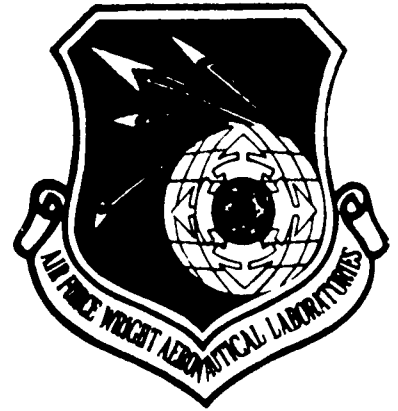
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TRANSONIC FAN/COMPRESSOR ROTOR DESIGN STUDY



Volume VI

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General Electric Company
Aircraft Engine Business Group
Advanced Technology Programs Dept.
Cincinnati, Ohio 45215

February 1982

Final Report for Period September 1980 - February 1982

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This technical report has been reviewed and is approved for publication.


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FOR THE COMMANDER


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Director, Turbine Engine Division

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This volume describes the aerodynamic design details of the Phase V rotor. The Phase V rotor was designed to have less effective camber in the aft region of the airfoil than the baseline rotor. The hub region was kept essentially the same as the baseline rotor. The location of maximum airfoil thickness is 70% of length at the tip and 56% at the hub which is the same as the baseline rotor.

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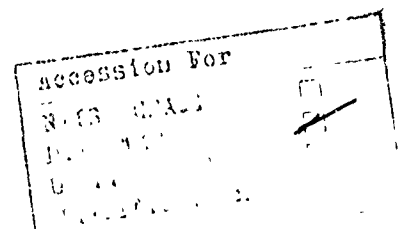
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PHASE V ROTOR DESIGN

This Final Technical Report was prepared by the Advanced Technology Programs Department, Aircraft Engine Business Group, General Electric Company, Evendale, Ohio for the United States Air Force Systems Command, Air Force Wright Aeronautical Laboratories Wright-Patterson Air Force Base, Ohio under Contract F33615-80-C-2059. The work was performed over a period of one year starting in September 1980. Effren Strain (Captain USAF) was the Air Force Project Engineer for this program.

This report describes the results of an effort to aerodynamically define five rotor designs, all parametrically related to a base line design which could be evaluated by future testing in order to define the sensitivity of transonic blade rows to several design variables.

For the General Electric Company Mr. D.E. Parker was the Technical Program Manager for this program. Mr. M.R. Simonson was the principal investigator. Mr. A.J. Bilhardt was the overall Program Manager.



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
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LIST OF SYMBOLS AND ABBREVIATIONS

1. Used in Circumferential Average Flow Output Tables

STA	calculation station number	
WTF	total airflow	
PSIC	stream function (0 = tip (OD), 1 = hub (ID))	
Z	axial location	inches
R	radius	inches
PHI	streamline slope	degrees
CURV	streamline curvature  = neg.,  = pos.	1/inches
VM	meridional velocity	ft/sec
CU	absolute tangential velocity	ft/sec
ALPHAM	absolute flow angle on stream surface	degrees
MM	meridional Mach number	
SL	calculation streamline number	
BLDBLK	flow blockage factor	(free area - blocked area)/free area
PS	static pressure	psia
PT	total pressure	psia
TT	total temperature	degrees
BETAM	relative flow angle on stream surface	degrees
UREL	relative velocity	ft/sec
MREL	relative Mach number	
VABS	absolute velocity	ft/sec
MABS	absolute Mach number	
GAMMA	specific heat ratio	
PT-RAT	total pressure/inlet total pressure	
TT-RAT	total temperature/inlet total temperature	
RCU	radius x tangential velocity	in-ft/sec
CZ	axial velocity	ft/sec
PCT IMM	percent annulus immersion from tip (OD)	
RAD	average of leading and trailing edge streamline radii	inches
ACC PT RATIO	cumulative total pressure ratio	
ACC TT RATIO	cumulative total temperature ratio	

LIST OF SYMBOLS AND ABBREVIATIONS

1. Used in Circumferential Average Flow Output Tables (Cont'd)

AD.	adiabatic efficiency
POLY	polytropic efficiency
Axial VEL R	axial velocity ratio across blade row

2. Used in Stream Surface Blade Coordinate Tables

PT	point number	
PCT X	fraction of meridional distance from leading edge	
X	meridional coordinate on meanline	inches
Y	tangential coordinate on meanline	inches
B*M	meanline angle on stream surface	degrees
T(M)	thickness of blade perpendicular to meanline	inches
XS	meridional coordinate on suction surface	inches
YS	tangential coordinate on suction surface	inches
XP	meridional coordinate on pressure surface	inches
YP	tangential coordinate on pressure surface	inches

3. Used in Plane Section Coordinate Tables

Z	axial coordinate of stacking axis	inches
R	radius of coordinate system origin	inches
MU	tilt angle in axial direction	degrees
ETA	tilt angle in tangential direction	degrees
RHO	section height	inches
PT	point number	
ALPHA	axial coordinate	inches
ZETA*	meanline angle from axial	degrees
UPSILON	coordinate perpendicular to ALPHA and radius	inches
PCT AL	fraction of axial distance from leading edge	
T/C	local thickness/chord ratio	

SECTION XIX

DESIGN OF PHASE V ROTOR

1. INTRODUCTION

The best efficiency at the design speed for transonic rotors normally occurs near the "knee" of the pressure ratio - flow characteristics where the flow begins to decrease. [For the baseline rotor, the best design speed efficiency occurred at a pressure ratio that is about 8% higher than the test data point selected as the base for the designs carried out under this contract. The peak efficiency at the design speed was about 2 points higher than that measured at the base point.] The baseline point was selected for this work because it provides reasonable, stall margin. If it is thought of as an "operating line" point, then there is reason to think that an improvement in efficiency might be achieved at this "operating line" point by adjusting the effective camber so that the "knee" of the characteristics more nearly coincides with the operating line point. The term "effective camber" is loosely used to indicate the circulation capacity of the cascade, since the normal camber definition is not sufficient for cascades with nonstandard mean lines which may depart significantly from a circle arc.

The reduction in effective camber will not necessarily reduce the stall line at the design speed but may have a detrimental effect on the efficiency at reduced RPM operation. Currently there is inadequate definitive data to allow an assessment of the trade in a potentially higher design speed operating line efficiency against a potential loss in part speed efficiency.

2. DESIGN PROCEDURE

The "data match" circumferential average flow solution and the stream Surface Blade Sections (SBS) analysis of the baseline rotor previously described in Volume I were used as a starting point for the design of the Phase V rotor. For the Phase V rotor a higher efficiency was assumed for the outer 60% of the flow since it is believed that the Phase V blade will have increased efficiency in this region at the design pressure ratio. The rotor exit total pressure was maintained the same as the baseline rotor while the total temperature was reduced to reflect the assumed higher efficiency.

Since it was desired to keep the front portion of the airfoil essentially identical to the baseline rotor, the cordwise distribution of total pressure was kept identical to that of the data match of the baseline rotor. The work input (total temperature rise) was maintained the same as the data match of the baseline rotor in the front half of the rotor then departed smoothly from the baseline case so that the rotor exit total temperature was consistent with the assumed increased efficiency in the outer portion of the annulus.

The resulting streamline work input (as a fraction of the total streamline work) is plotted versus percent axial projection in Figure 68. The tip streamline is the one on the left. Each subsequent streamline is indexed to the right by the value of its stream function (fraction of the total flow from the tip). The dashed lines are lines of constant percent axial projection.

The resulting streamline static pressure distribution for the Phase I blade is compared with the data match of the baseline rotor on Figure 69.

To reduce the effective camber of the rotor, the departure angle distribution in the rear half of the airfoil was modified to concentrate the camber more heavily toward the trailing edge. This results in a larger stagger angle than the baseline rotor. A comparison of the Phase V tip airfoil with the baseline rotor is shown on Figure 70. The trailing edge angle was specified in the same manner as was used for all rotors designed under this contract. A modified version of Carter's Rule was used to calculate a reference deviation angle for the baseline rotor. This procedure converts the vector diagrams (from the data match calculations) to an equivalent two-dimensional set of vectors which would produce the same circulation as the actual blade taking into account the change in streamline radius and meridional velocity. The difference between the deviation angle implied by the data match calculations and the reference deviation angle was then added to the reference deviation angle calculated from the modified Carter's Rule for the Phase V blade.

A method of characteristics computer program was used to analyze the flow in the cascade flow induction region for streamlines 3 and 6 to assure that the rotor would achieve the design flow. For other streamlines the difference between the suction surface angle and the "free-flow" streamline angle was compared with similar data from the data match calculations of the baseline rotor. This,

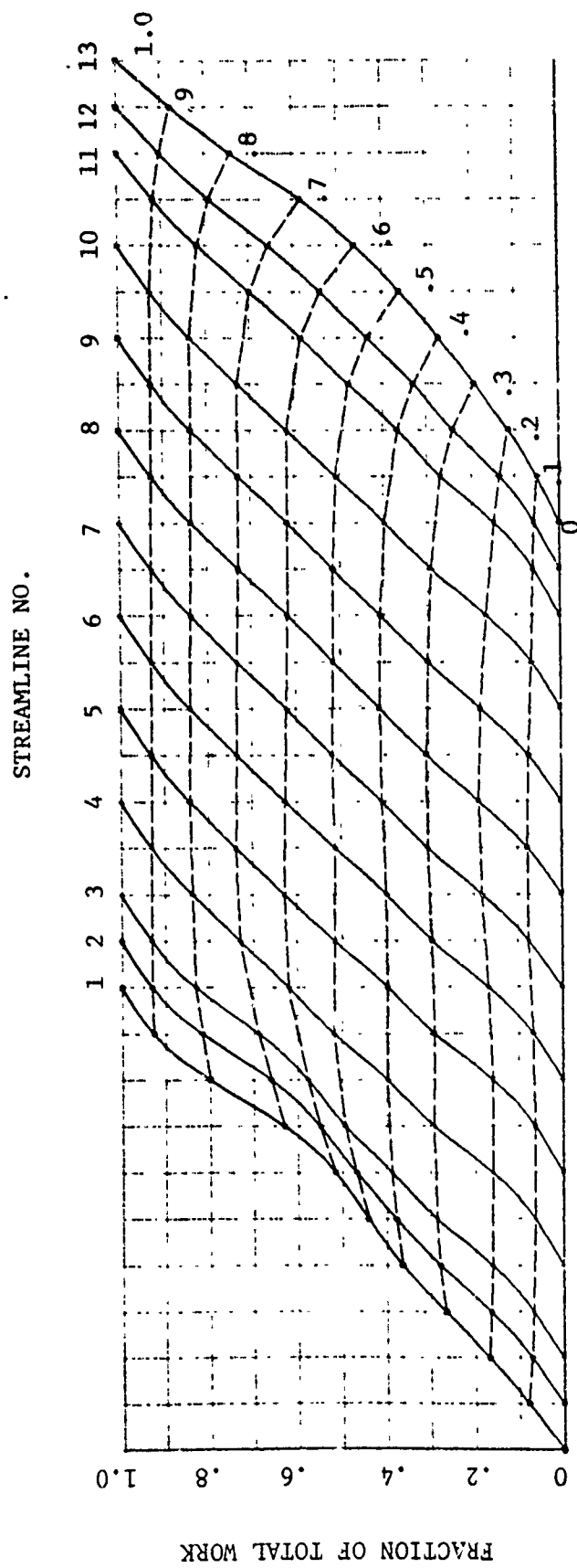


Figure 68. Rotor V Intrablade Work Distribution

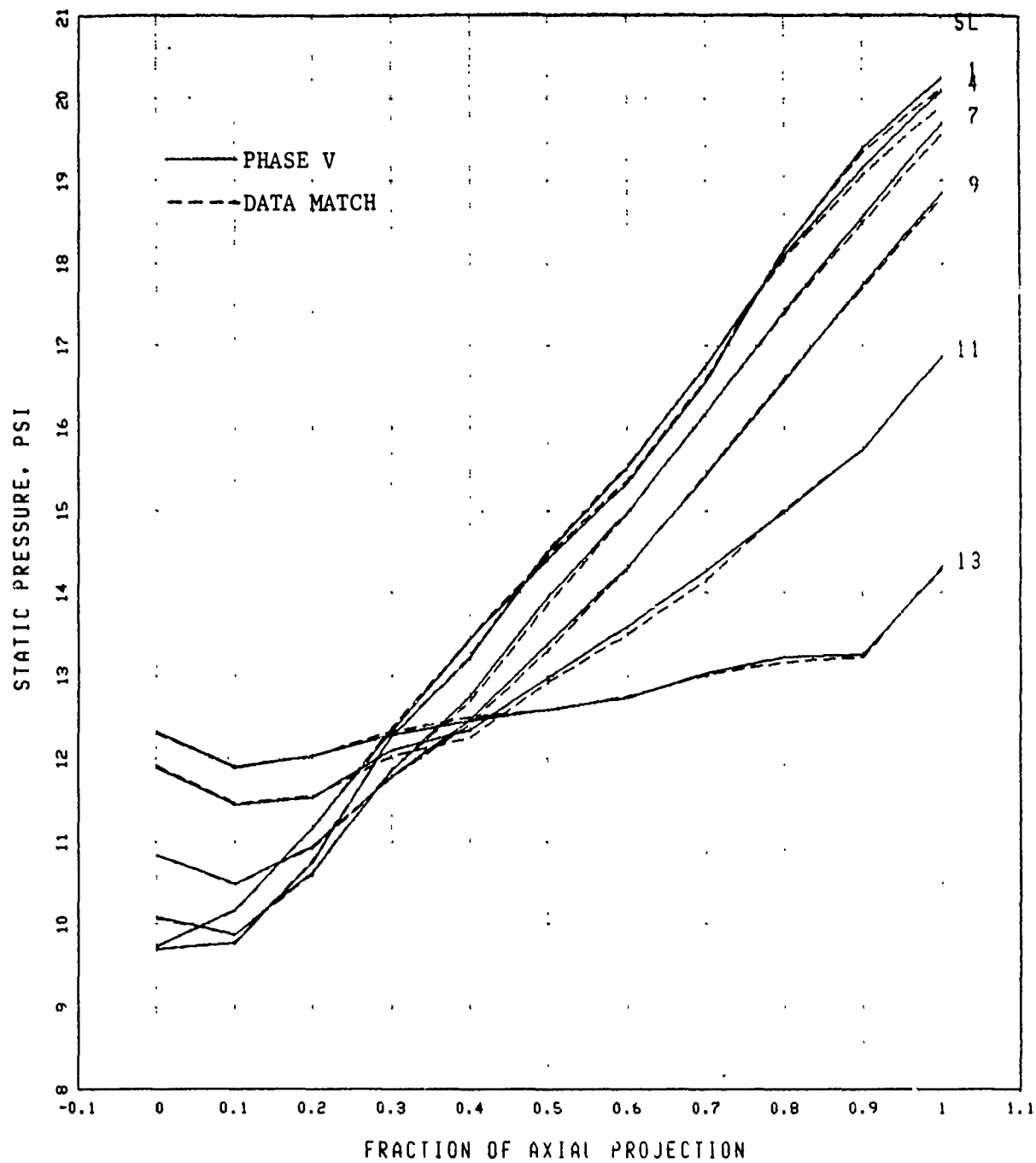


Figure 69 . Phase V Rotor Static Pressure Distribution

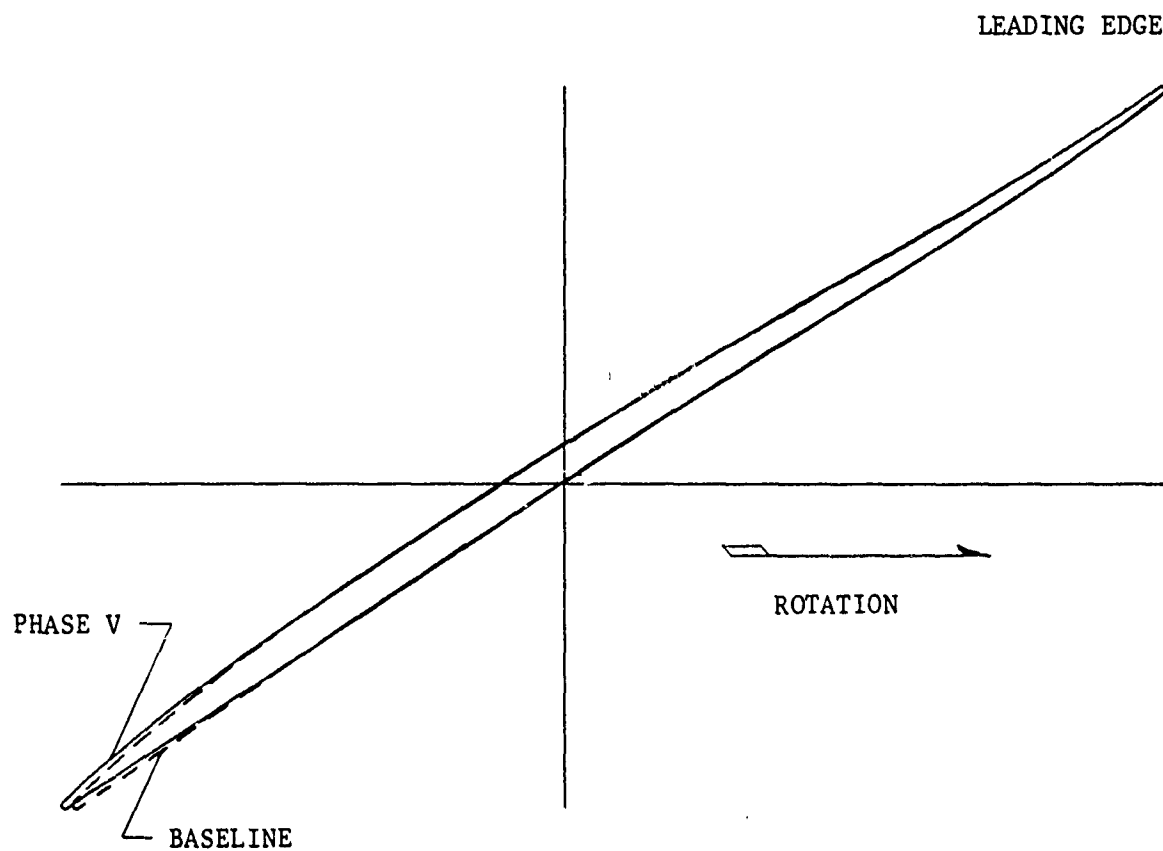


Figure 70. Phase V Rotor Streamsurface Tip Section
Compared with Baseline Design

then, was used as a guide in setting the suction surface angle in the flow induction region. This procedure was largely a formality for the Phase V rotor since the front portion of the airfoil was kept essentially the same as the baseline rotor. However, somewhat different radial blade forces resulting from somewhat different lean angles of the stacked blade made small difference in the radial distribution of streamtube convergence. This required small adjustments in blade shape to achieve the same flow induction capacity.

The radial variation of blade incidence angle was kept essentially the same as the data match of the baseline rotor and is shown in Figure 71.

The radial variation of the Phase V rotor deviation angle is shown in Figure 72 and the rotor deviation angle minus the reference deviation angle is compared with the data match of the baseline rotor in Figure 73.

The radial distribution of the calculated stator incidence angle is compared with the data match of the baseline rotor in Figure 74. The smaller calculated incidence angle in the outer portion for the Phase V rotor results primarily from the assumed higher efficiency in this region.

A plot of the departure angles (the difference between the local flow angle and blade meanline angle) for each streamsurface section is shown in Figure 75.

The throat margin was kept essentially identical to the data match of the baseline rotor and is shown in Figure 76. The throat margin for a streamsurface blade section is defined here as the percent of excess throat area over and above the minimum theoretical area required to pass the streamtube flow at a throat Mach number of 1.0 and assuming a total pressure loss equivalent to a normal shock at the upstream Mach number. In a rotor the effect of radius change (between the leading edge and throat) on the relative total enthalpy and pressure is included. As can be seen in Figure 76 the Phase I rotor throat margin is nearly identical to that of the data match of the baseline design.

Details of the Phase I rotor design are given in Section XXI.

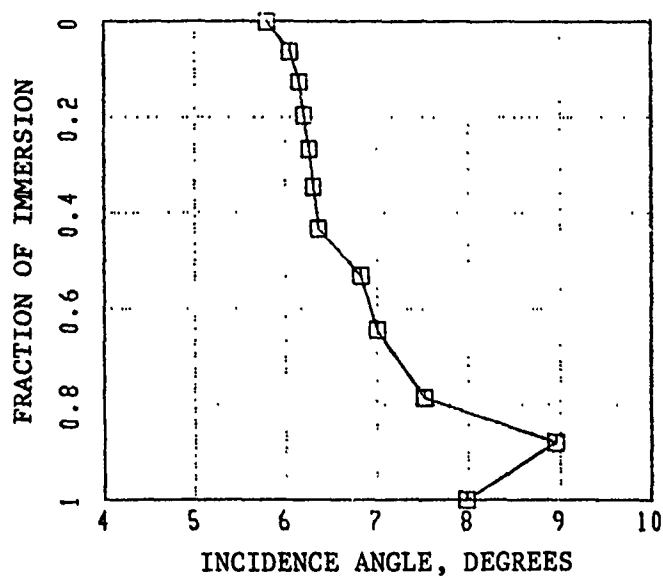


Figure 71. Phase V Rotor Incidence Angle Versus Fractional Immersion

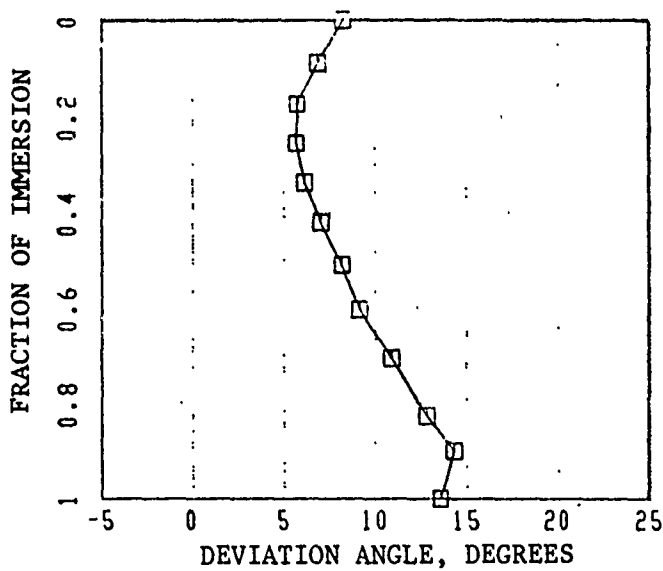


Figure 72. Phase V Rotor Deviation Angle Versus Fractional Immersion

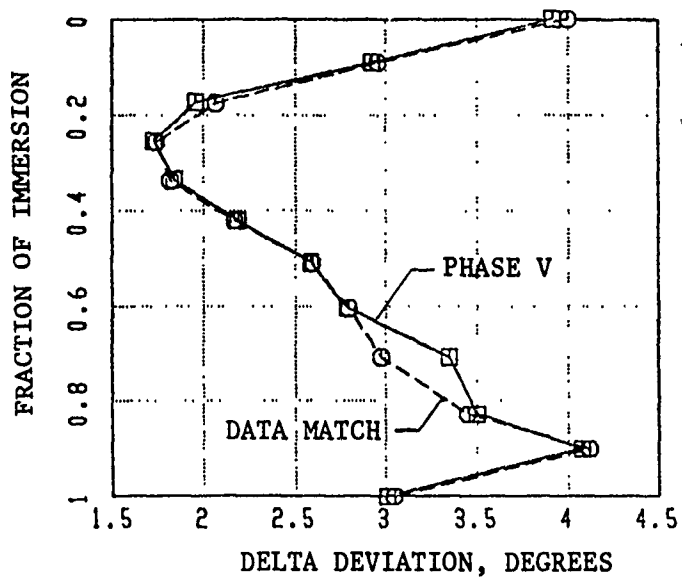


Figure 73. Phase V Rotor Deviation Angle Minus Reference Deviation Angle Compared With Data Match

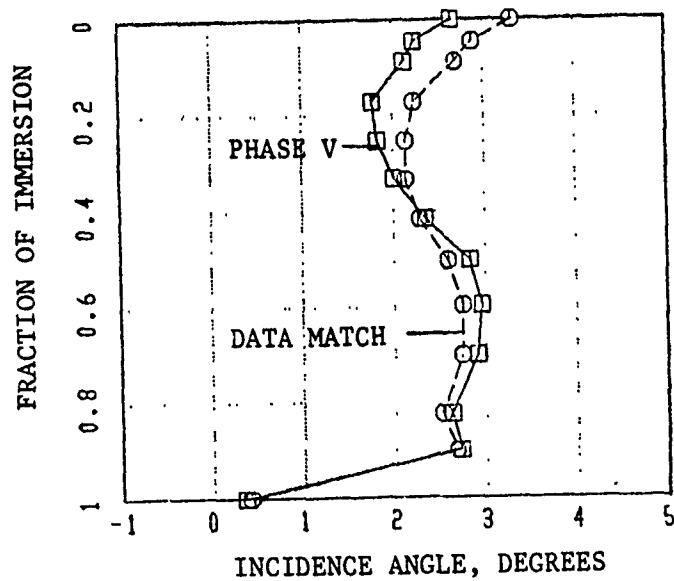


Figure 74. Phase V Stator Incidence Angle Compared With Data Match

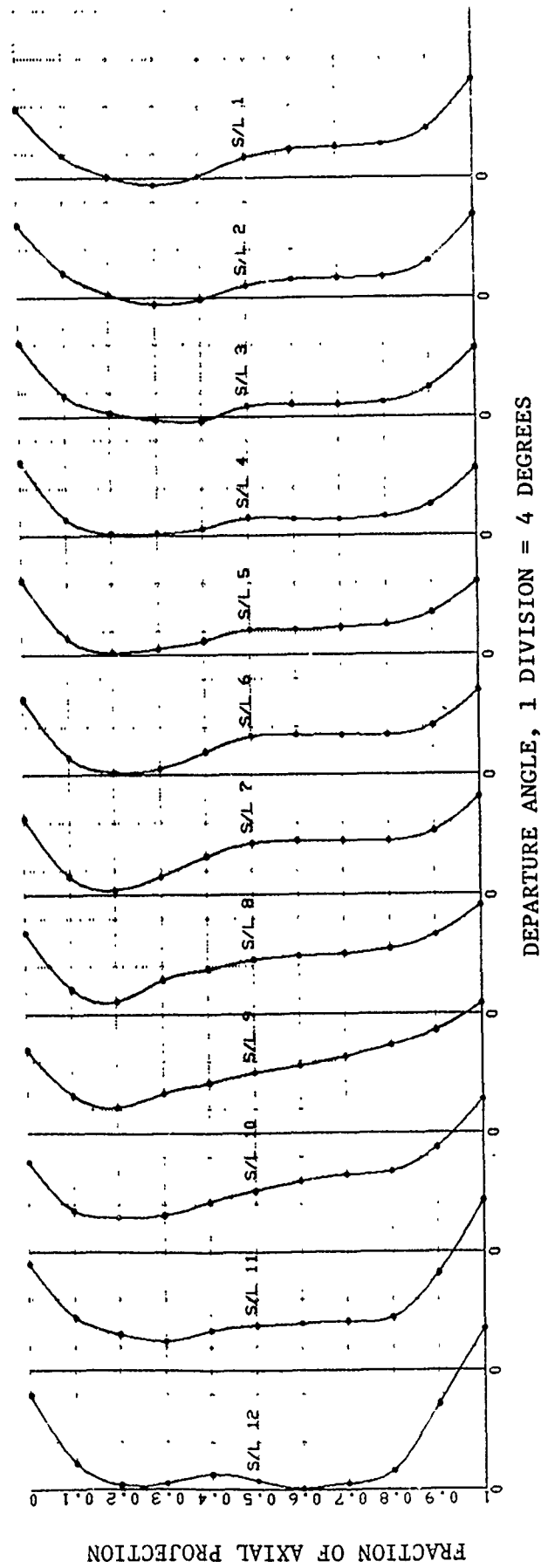


Figure 75. Phase V Rotor Deviation Angle Versus Fractional Immersion

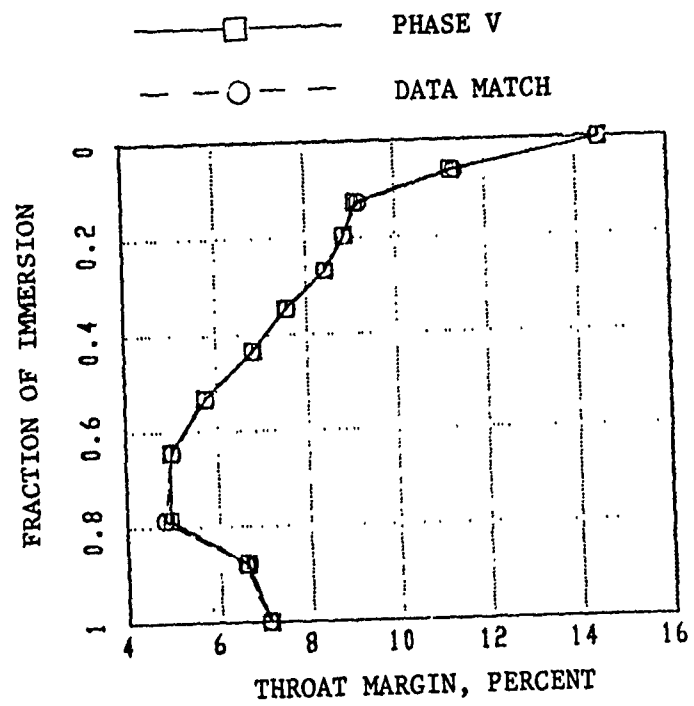


Figure 76 . Phase V Rotor Throat Margin Compared With Data Match

SECTION XX
DETAILS OF PHASE V ROTOR DESIGN

1. CIRCUMFERENTIAL AVERAGE FLOW SOLUTION

The following tabulation presents the detail results of the Phase I Rotor circumferential average flow computation. Each page of the tabulation gives results for one calculation station. Figure 77 shows the calculation station locations within the gas flowpath. At each calculation station various aerodynamic parameters are given on each of thirteen calculation streamlines. Also given are several mass averaged station flow properties. The Phase V rotor blade forces are included at the end of this section.

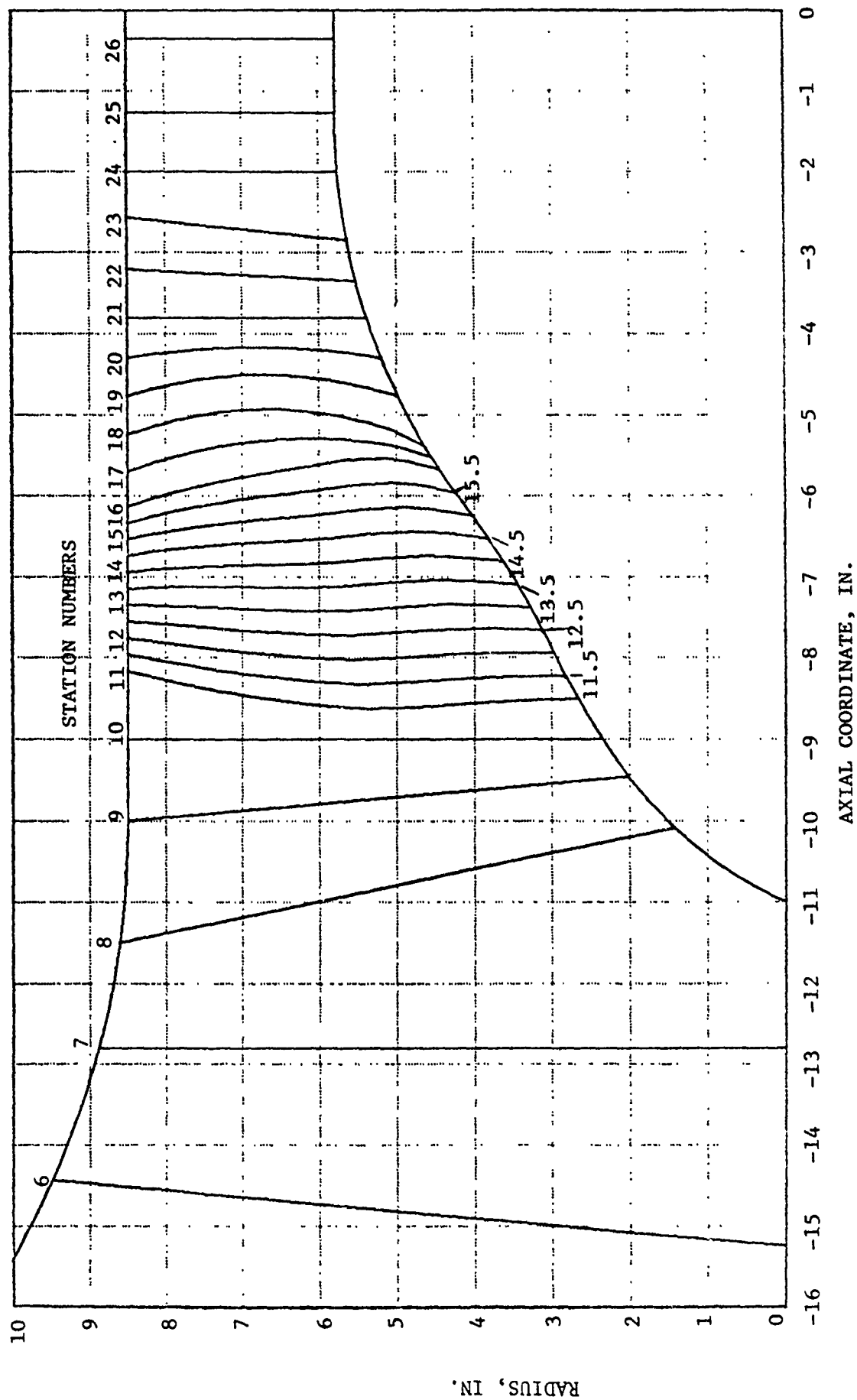


Figure 77. Compressor Flowpath With Calculation Stations

INLET STA= 5.000
 WTF= 61.365 I= 1 AFLOW= 478.13 D+H=O.
 PSIC -18.800 13.207 -50.10 0.0831 150.4 0. 0. 0.135
 0.050 -18.800 12.564 -43.54 0. 181.0 0. 0. 0.163
 0.100 -18.800 12.020 -40.31 0. 195.9 0. 0. 0.176
 0.200 -18.800 11.027 -34.70 0. 218.6 0. 0. 0.196
 0.300 -18.800 10.099 -29.90 0. 237.1 0. 0. 0.213
 0.400 -18.800 9.193 -25.65 0. 252.4 0. 0. 0.227
 0.500 -18.800 8.277 -21.78 0. 265.1 0. 0. 0.239
 0.600 -18.800 7.319 -18.16 0. 275.9 0. 0. 0.248
 0.700 -18.800 6.277 -14.68 0. 284.9 0. 0. 0.257
 0.800 -18.800 5.083 -11.19 0. 292.5 0. 0. 0.264
 0.900 -18.800 3.569 -7.34 0. 298.9 0. 0. 0.270
 0.950 -18.800 2.516 -4.92 0. 301.6 0. 0. 0.272
 1.000 -18.800 0.000 0. 303.9 0. 0. 0.274

SL BLOBLK PS PT TT BETAM VREL MREL VABS MABS
 1 0.997 14.510 14.696 518.7 86.31 2335.4 2.095 150.4 0.135
 2 0.997 14.427 14.696 518.7 85.33 2224.5 1.997 181.0 0.163
 3 0.997 14.382 14.696 518.7 84.72 2130.2 1.913 195.9 0.176
 4 0.997 14.305 14.696 518.7 83.59 1958.1 1.760 218.6 0.196
 5 0.997 14.237 14.696 518.7 82.42 1797.9 1.617 237.1 0.213
 6 0.997 14.177 14.696 518.7 81.16 1641.9 1.477 252.4 0.227
 7 0.997 14.124 14.696 518.7 79.71 1484.6 1.337 265.1 0.239
 8 0.997 14.077 14.696 518.7 77.94 1320.6 1.190 275.9 0.248
 9 0.997 14.037 14.696 518.7 75.58 1143.7 1.031 284.9 0.257
 10 0.997 14.002 14.696 518.7 71.94 943.5 0.850 292.5 0.264
 11 0.997 13.972 14.696 518.7 64.61 697.2 0.629 298.9 0.270
 12 0.997 13.959 14.696 518.7 55.81 536.8 0.484 301.6 0.272
 13 0.997 13.947 14.696 518.7 0.00 303.9 0.274 303.9 0.274

STA 5.000 MASS AVERAGED PROPERTIES
 PT= 14.696 TT= 518.69 GAMMA=1.4015 PT-RAT= 1.000 TT-RAT= 1.000
 RCU= 0. VM= 255.3 CZ= 233.4 MM=0.230 MABS=0.230 MREL=1.300

INLET STA= 6.000 AFLOW= 277.56 FREE D+H=O.
 WTF= 61.365 I= 2 MTIP= 14 OPTX=FREE ITYPE=O INBR=O ABC=O. ABH=O.
 PSIC Z R PHI CURV VM CU ALPHAM MM
 0. -14.431 9.481 -24.96 -0.0952 514.7 0. 0. 0.471
 0.050 -14.450 9.254 -24.10 -0.1028 507.6 0. 0. 0.464
 0.100 -14.470 9.020 -22.95 -0.0955 501.1 0. 0. 0.458
 0.200 -14.513 8.532 -20.65 -0.0825 489.4 0. 0. 0.447
 0.300 -14.558 8.010 -18.38 -0.0712 478.4 0. 0. 0.436
 0.400 -14.606 7.446 -16.13 -0.0614 467.8 0. 0. 0.426
 0.500 -14.660 6.829 -13.87 -0.0529 457.2 0. 0. 0.416
 0.600 -14.719 6.141 -11.59 -0.0455 446.4 0. 0. 0.406
 0.700 -14.787 5.352 -9.23 -0.0390 434.9 0. 0. 0.395
 0.800 -14.869 4.402 -6.73 -0.0330 422.1 0. 0. 0.383
 0.900 -14.978 3.142 -4.03 -0.0257 407.0 0. 0. 0.369
 0.950 -15.057 2.234 -2.57 -0.0190 398.2 0. 0. 0.361
 1.000 -15.250 -0.000 0. 387.1 0. C. 0.351

SL BDLBK PS PT TT BETAM VREL MREL VABS MABS
 1 0.997 12.623 14.696 518.7 72.90 1750.4 1.601 514.7 0.471
 2 0.997 12.676 14.696 518.7 72.73 1710.1 1.564 507.6 0.464
 3 0.997 12.726 14.696 518.7 72.53 1668.8 1.525 501.1 0.458
 4 0.997 12.812 14.696 518.7 71.99 1583.2 1.445 489.4 0.447
 5 0.997 12.892 14.696 518.7 71.30 1492.2 1.361 478.4 0.436
 6 0.997 12.968 14.696 518.7 70.40 1394.8 1.271 467.8 0.426
 7 0.997 13.041 14.696 518.7 69.22 1288.9 1.174 457.2 0.416
 8 0.997 13.116 14.696 518.7 67.61 1172.0 1.066 446.4 0.406
 9 0.997 13.193 14.696 518.7 65.27 1039.7 0.945 434.9 0.395
 10 0.997 13.277 14.696 518.7 61.48 884.2 0.803 422.1 0.383
 11 0.997 13.374 14.696 518.7 53.72 687.8 0.624 407.0 0.369
 12 0.997 13.429 14.696 518.7 44.72 560.4 0.508 398.2 0.361
 13 0.997 13.496 14.696 518.7 -0.00 387.1 0.351

STA 6.000 MASS AVERAGED PROPERTIES
 PT= 14.696 TT= 518.69 GAMMA=1.4016 PT-RAT= 1.000 TT-RAT= 1.000
 RCU= 0. VM= 455.6 CZ= 438.5 MM=0.415 MABS=0.415 MREL=1.120

INLET STA= 7.000 FREE
 WTF= 61.365 I= 3 MTIP= 27 AFLOW= 244.35 D*H=O.
 PSIC Z OPTX=DPP PHI CURV VM CU ALPHAM MM
 0. -12.800 8.880 -15.47 -0.0952 625.2 0. 0. 0.578
 0.050 -12.800 8.675 -14.65 -0.0872 617.8 0. 0. 0.571
 0.100 -12.800 8.464 -13.90 -0.0849 610.4 0. 0. 0.564
 0.200 -12.800 8.021 -12.40 -0.0795 595.1 0. 0. 0.549
 0.300 -12.800 7.546 -10.87 -0.0736 579.6 0. 0. 0.533
 0.400 -12.800 7.032 -9.28 -0.0680 563.9 0. 0. 0.518
 0.500 -12.800 6.468 -7.60 -0.0629 547.6 0. 0. 0.502
 0.600 -12.800 5.837 -5.79 -0.0587 530.4 0. 0. 0.486
 0.700 -12.800 5.112 -3.79 -0.0560 511.3 0. 0. 0.468
 0.800 -12.800 4.237 -1.46 -0.0558 488.4 0. 0. 0.446
 0.900 -12.800 3.064 1.52 -0.0634 455.8 0. 0. 0.415
 0.950 -12.800 2.206 3.55 -0.0759 428.6 0. 0. 0.390
 1.000 -12.800 0.000 0. 0. 383.5 0. 0. 0.347

SL BDBLK PS PT TT BETAM VREL MREL VABS MABS
 1 0.998 11.714 14.696 518.7 68.25 1687.2 1.560 625.2 0.578
 2 0.998 11.779 14.696 518.7 68.02 1650.8 1.525 617.8 0.571
 3 0.998 11.843 14.696 518.7 67.77 1613.5 1.490 610.4 0.564
 4 0.998 11.974 14.696 518.7 67.20 1535.5 1.415 595.1 0.549
 5 0.998 12.105 14.696 518.7 66.48 1452.4 1.337 579.6 0.533
 6 0.998 12.235 14.696 518.7 65.56 1363.1 1.253 563.9 0.518
 7 0.998 12.366 14.696 518.7 64.37 1266.0 1.162 547.6 0.502
 8 0.998 12.502 14.696 518.7 62.76 1158.6 1.061 530.4 0.486
 9 0.998 12.649 14.696 518.7 60.46 1036.9 0.948 511.3 0.468
 10 0.998 12.819 14.696 518.7 56.85 893.0 0.815 488.4 0.446
 11 0.998 13.051 14.696 518.7 49.87 707.2 0.644 455.8 0.415
 12 0.998 13.234 14.696 518.7 42.25 579.1 0.526 428.6 0.390
 13 0.998 13.517 14.696 518.7 0.00 383.5 0.347 383.5 0.347

STA 7.000 MASS AVERAGED PROPERTIES
 PT= 14.696 TT= 518.69 GAMMA=1.4017 PT-RAT= 1.000 TT-RAT= 1.000
 RCU= 0. VM= 539.1 CZ= 532.1 MM=0.495 MABS=0.495 MREL=1.109

INLET STA= 8.000 FREE
WTF= 61.365 I= 4 MTIP= 40 AFLOW= 224.07 D*H=0.0.
PSIC Z OPTX=DDP PHI CURV VM CL ALPHAM MM
0. -11.499 8.608 -8.21 -0.0953 712.0 0. 0. 0.665
0.050 -11.461 8.412 -7.49 -0.0964 703.2 0. 0. 0.656
0.100 -11.421 8.211 -6.86 -0.0909 693.8 0. 0. 0.647
0.200 -11.339 7.790 -5.59 -0.0815 675.7 0. 0. 0.628
0.300 -11.250 7.341 -4.25 -0.0744 658.7 0. 0. 0.611
0.400 -11.155 6.858 -2.77 -0.0695 642.1 0. 0. 0.595
0.500 -11.052 6.333 -1.09 -0.0668 625.1 0. 0. 0.578
0.600 -10.938 5.753 0.90 -0.0667 606.2 0. 0. 0.559
0.700 -10.809 5.096 3.37 -0.0696 583.8 0. 0. 0.538
0.800 -10.656 4.320 6.70 -0.0769 554.5 0. 0. 0.509
0.900 -10.459 3.318 12.11 -0.0935 510.5 0. 0. 0.467
0.950 -10.323 2.629 17.76 -0.1212 468.0 0. 0. 0.427
1.000 -10.086 1.421 47.99 0.1910 433.9 0. 0. 0.394

SL BLDLK PS PT TT BETAM VREL MREL VABS MABS
1 0.997 10.919 14.696 518.7 64.89 1677.6 1.567 712.0 0.665
2 0.997 11.003 14.696 518.7 64.65 1642.6 1.533 703.2 0.656
3 0.997 11.092 14.696 518.7 64.41 1606.5 1.497 693.8 0.647
4 0.997 11.259 14.696 518.7 63.82 1531.8 1.424 675.7 0.628
5 0.997 11.415 14.696 518.7 63.05 1453.3 1.349 658.7 0.611
6 0.997 11.564 14.696 518.7 62.05 1370.1 1.269 642.1 0.595
7 0.997 11.716 14.696 518.7 60.78 1280.6 1.184 625.1 0.578
8 0.997 11.879 14.696 518.7 59.16 1182.5 1.091 606.2 0.559
9 0.937 12.069 14.696 518.7 57.01 1072.2 0.987 583.8 0.538
10 0.997 12.311 14.696 518.7 53.97 942.7 0.866 554.5 0.509
11 0.997 12.655 14.696 518.7 48.92 776.8 0.710 510.5 0.467
12 0.997 12.966 14.696 518.7 44.75 659.0 0.601 468.0 0.427
13 0.997 13.200 14.696 518.7 30.03 501.1 0.456 433.9 0.394

STA 8.000 MASS AVERAGED PROPERTIES
PT= 14.696 TT= 518.69 GAMMA=1.4017 PT-RAT= 1.000 TT-RAT= 1.000
RCU= 0. VM= 612.1 CZ= 604.7 MM=0.566 MABS=0.566 MREL=1.140

INLET STA= 9.000 AFLOW= 211.87 D*C=O. FREE D*H=O.
WTF= 61.365 MTIP= 53 OPTI=FREE ITYPE=O INBR=O ABC=O. ABH=O.
PSIC Z R CURV VM CU ALPHAM MM

0.	-9.999	8.500	0.	758.7	0.	0.	0.713
0.050	-9.984	8.315	-1.11	-0.0542	751.7	0.	0.706
0.100	-9.968	8.125	-0.88	-0.0525	743.8	0.	0.698
0.200	-9.935	7.728	-0.27	-0.0508	730.0	0.	0.683
0.300	-9.900	7.305	0.61	-0.0511	715.9	0.	0.669
0.400	-9.862	6.851	1.77	-0.0531	700.6	0.	0.653
0.500	-9.821	6.359	3.28	-0.0573	682.8	0.	0.635
0.600	-9.776	5.816	5.23	-0.0634	661.0	0.	0.614
0.700	-9.725	5.201	7.76	-0.0713	633.1	0.	0.586
0.800	-9.665	4.475	11.18	-0.0792	596.4	0.	0.550
0.900	-9.587	3.542	16.60	-0.0812	546.1	0.	0.501
0.950	-9.536	2.919	21.64	-0.0409	515.3	0.	0.471
1.000	-9.460	2.011	38.65	0.1881	511.4	0.	0.468

SL BLDLTK PS PT TT BETAM VREL MREL VABS MABS

1	0.996	10.468	14.696	518.7	63.17	1681.0	1.580	758.7	0.713
2	0.996	10.536	14.696	518.7	62.87	1648.7	1.548	751.7	0.706
3	0.996	10.614	14.696	518.7	62.58	1615.2	1.515	743.8	0.698
4	0.996	10.747	14.696	518.7	61.84	1546.8	1.448	730.0	0.683
5	0.996	10.882	14.696	518.7	60.95	1474.5	1.378	715.9	0.669
6	0.996	11.028	14.696	518.7	59.91	1397.4	1.303	700.6	0.653
7	0.996	11.194	14.696	518.7	58.68	1313.6	1.223	682.8	0.635
8	0.996	11.394	14.696	518.7	57.22	1220.8	1.133	661.0	0.614
9	0.996	11.644	14.696	518.7	55.40	1115.1	1.032	633.1	0.586
10	0.996	11.963	14.696	518.7	52.94	989.6	0.912	596.4	0.550
11	0.996	12.378	14.696	518.7	48.86	830.0	0.762	546.1	0.501
12	0.996	12.618	14.696	518.7	45.00	728.7	0.667	515.3	0.471
13	0.996	12.648	14.696	518.7	34.76	622.4	0.569	511.4	0.468

STA 9.000 MASS AVERAGED PROPERTIES
PT= 14.696 TT= 518.69 GAMMA=1.4018 PT-RAT= 1.000 TT-RAT= 1.000
RCU= 0. VM= 663.8 CZ= 655.4 MM=0.617 MABS=0.617 MREL=1.178

INLET			STA= 10.000			AFLOW= 204.13			D+C=O.			FREE											
WTF= 61 365			I= 6			OPTX=FREE			D*H=O.			D*H=O.											
PSIC			R			PHI			CURV			VM			CU			ALPHAM			MM		
0	-9.000	8.500	0.	0.	0.	773.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.729	
0.050	-9.000	8.317	0.24	0.0031	774.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.729	
0.100	-9.000	8.130	0.64	-0.0023	774.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.729	
0.200	-9.000	7.742	1.42	-0.0123	771.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.726	
0.300	-9.000	7.333	2.46	-0.0210	765.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.720	
0.400	-9.000	6.896	3.84	-0.0306	755.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.709	
0.500	-9.000	6.425	5.60	-0.0410	739.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.693	
0.600	-9.000	5.906	7.92	-0.0568	715.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.669	
0.700	-9.000	5.320	10.81	-0.0735	681.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.634	
0.800	-9.000	4.626	14.42	-0.0870	634.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.587	
0.900	-9.000	3.734	19.55	-0.0853	575.2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.529	
0.950	-9.000	3.141	23.72	-0.0842	535.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.491	
1.000	-9.000	2.340	32.45	0.1922	543.6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.499	

SL			BLOBLK			PS			PT			TT			BETAM			VREL			MREL			VABS			MABS		
1	0.994	10.317	14.696	518.7	62.71	1687.9	1.589	773.9	0.729																				
2	0.994	10.315	14.696	518.7	62.19	1659.4	1.563	774.2	0.729																				
3	0.994	10.314	14.696	518.7	61.65	1630.3	1.535	774.2	0.729																				
4	0.994	10.341	14.696	518.7	60.55	1559.1	1.477	771.6	0.726																				
5	0.994	10.402	14.696	518.7	59.40	1503.4	1.414	765.4	0.720																				
6	0.994	10.503	14.696	518.7	58.18	1432.2	1.345	755.1	0.709																				
7	0.994	10.657	14.696	518.7	56.89	1353.5	1.269	739.3	0.693																				
8	0.994	10.884	14.696	518.7	55.52	1264.4	1.182	715.7	0.669																				
9	0.994	11.207	14.696	518.7	54.03	1160.0	1.079	681.4	0.634																				
10	0.994	11.633	14.696	518.7	52.14	1033.9	0.957	634.5	0.587																				
11	0.994	12.142	14.696	518.7	48.88	874.6	0.805	575.2	0.529																				
12	0.994	12.460	14.696	518.7	45.98	770.9	0.707	535.7	0.491																				
13	0.994	12.398	14.696	518.7	37.22	682.6	0.626	543.6	0.499																				

SL	BLOBLK	PS	PT	TT	BETAM	VREL	MREL	VABS	MABS
1	0.994	10.317	14.696	518.7	62.71	1687.9	1.589	773.9	0.729
2	0.994	10.315	14.696	518.7	62.19	1659.4	1.563	774.2	0.729
3	0.994	10.315	14.696	518.7	61.65	1630.3	1.535	774.2	0.729
4	0.994	10.341	14.696	518.7	60.55	1569.1	1.477	771.6	0.726
5	0.994	10.402	14.696	518.7	59.40	1503.4	1.414	765.4	0.720
6	0.994	10.503	14.696	518.7	58.18	1432.2	1.345	755.1	0.709
7	0.994	10.657	14.696	518.7	56.89	1353.5	1.269	739.3	0.693
8	0.994	10.884	14.696	518.7	55.52	1264.4	1.182	715.7	0.669
9	0.994	11.207	14.696	518.7	54.03	1160.0	1.079	681.4	0.634
10	0.994	11.633	14.696	518.7	52.14	1033.9	0.957	634.5	0.587
11	0.994	12.142	14.696	518.7	48.88	874.6	0.805	575.2	0.529
12	0.994	12.460	14.696	518.7	45.98	770.9	0.707	535.7	0.491
13	0.994	12.398	14.696	518.7	37.22	682.6	0.626	543.6	0.499

STA 10.000 MASS AVERAGED PROPERTIES
PT= 14.696 TT= 518.69 GAMMA=1.4018 PT-RAT= 1.000 TT-RAT= 1.000
RCU= 0. VM= 705.9 CZ= 694.5 MM=0.660 MABS=0.660 MREL=1.217

ROTOR1 STA= 11.000 AFLOW= 197.41 LE ROTOR
 WTF= 61.365 I= 7 MTIP= 79 OPTV=FREE ITYPE=4 INBR=3 D=C=O. D*H=O.
 PSIC Z R PHI CURV VM CU ALPHAM MM ABH=O.

0	-8.166	8.500	0.	0.	832.8	0.	0.	0.791
0.050	-8.204	8.322	0.38	-0.0049	834.4	0.	0.	0.793
0.100	-8.242	8.140	0.75	-0.0030	835.3	0.	0.	0.794
0.200	-8.322	7.762	1.73	-0.0033	835.2	0.	0.	0.793
0.300	-8.397	7.362	3.02	-0.0110	829.7	0.	0.	0.788
0.400	-8.466	6.936	4.61	-0.0196	817.7	0.	0.	0.775
0.500	-8.531	6.475	6.63	-0.0351	797.1	0.	0.	0.753
0.600	-8.592	5.968	9.19	-0.0510	764.7	0.	0.	0.719
0.700	-8.624	5.397	12.32	-0.0638	720.6	0.	0.	0.674
0.800	-8.604	4.735	16.21	-0.0649	669.3	0.	0.	0.622
0.900	-8.548	3.904	21.67	-0.0681	603.7	0.	0.	0.557
0.950	-8.526	3.361	25.85	-0.0582	560.0	0.	0.	0.514
1.000	-8.507	2.653	31.20	0.1471	553.1	0.	0.	0.508

SL	BLDBLK	PS	PT	TT	BETAM	VREL	MREL	VABS	MABS
1	0.990	9.723	14.696	518.7	60.96	1715.7	1.629	832.8	0.791
2	0.990	9.707	14.696	518.7	60.40	1689.1	1.604	834.4	0.793
3	0.990	9.697	14.696	518.7	59.82	1661.6	1.579	835.3	0.794
4	0.990	9.699	14.696	518.7	58.63	1604.3	1.524	835.2	0.793
5	0.990	9.755	14.696	518.7	57.44	1541.6	1.463	829.7	0.788
6	0.990	9.878	14.696	518.7	56.26	1472.0	1.395	817.7	0.775
7	0.990	10.085	14.696	518.7	55.10	1393.2	1.316	797.1	0.753
8	0.990	10.409	14.696	518.7	54.02	1301.5	1.224	764.7	0.719
9	0.990	10.837	14.696	518.7	52.89	1194.3	1.117	720.6	0.674
10	0.990	11.319	14.696	518.7	51.31	1070.6	0.995	669.3	0.622
11	0.990	11.901	14.696	518.7	48.77	916.1	0.845	603.7	0.557
12	0.990	12.266	14.696	518.7	46.65	815.8	0.749	560.0	0.514
13	0.990	12.322	14.696	518.7	40.25	724.6	0.665	553.1	0.508

STA 11.000 MASS AVERAGED PROPERTIES
 PT= 14.696 TT= 518.69 GAMMA=1.4018 PT-RAT= 1.000 TT-RAT= 1.000
 RCU= 0. VM= 755.7 CZ= 741.5 MM=0.712 MABS=0.712 MREL=1.260

ROTOR1 STA= 11.500
 WTF= 61.365 I= 8 MTIP= 92 AFLOW= 181.06 D+C=0. D+H=0.
 PSIC Z OPTX=TT R PHI OPTV=PT ITYPE=5 INBR=3 ABC=0. ABH=0.
 0. -7.963 8.500 0. 0. 848.1 44.8 3.03 0.798
 0.050 -7.991 8.323 0.24 0.0275 851.7 40.5 2.72 0.803
 0.100 -8.020 8.143 0.59 0.0291 860.0 38.3 2.55 0.812
 0.200 -8.083 7.769 1.64 0.0166 876.9 36.5 2.38 0.831
 0.300 -8.143 7.376 3.10 -0.0005 886.7 37.1 2.39 0.842
 0.400 -8.198 6.958 4.88 -0.0166 886.5 40.3 2.61 0.841
 0.500 -8.251 6.509 7.08 -0.0209 878.6 47.8 3.12 0.832
 0.600 -8.301 6.017 9.72 -0.0109 854.7 51.7 3.46 0.807
 0.700 -8.324 5.465 12.91 -0.0026 819.2 53.6 3.75 0.769
 0.800 -8.299 4.826 16.76 0.0046 771.8 52.8 3.91 0.721
 0.900 -8.247 4.027 22.18 0.0139 711.5 57.0 4.58 0.660
 0.950 -8.231 3.507 25.89 0.0546 678.1 62.3 5.25 0.627
 1.000 -8.224 2.817 29.07 0.0800 653.8 69.0 6.02 0.603

IN ROTOR
 MABS
 0.799
 0.804
 0.813
 0.832
 0.843
 0.842
 0.833
 0.808
 0.771
 0.723
 0.662
 0.629
 0.606

STA 11.500 MASS AVERAGED PROPERTIES
 PT= 15.448 TT= 527.04 GAMMA=1.4018 PT-RAT= 1.051 TT-RAT= 1.016
 RCU= 283.5 VM= 829.3 CZ= 812.2 MM=0.781 MABS=0.783 MREL=1.276

ROTOR1 STA= 12.000 IN ROTOR
 WTF= 61.365 I= 9 AFLOW= 170.54 D+C=O. D+H=O.
 PSIC Z R OPTX=TT OPTV=PT PHI CURV VM CU ALPHAM MM ABH=O.
 0. -7.759 8.500 0. 0. 815.6 94.9 6.64 0.754
 0.050 -7.778 8.323 -0.15 0.0369 822.9 93.4 6.47 0.762
 0.100 -7.798 8.144 0.13 0.0426 832.9 91.7 6.29 0.773
 0.200 -7.844 7.775 1.36 0.0241 856.0 92.0 6.13 0.798
 0.300 -7.889 7.390 3.09 0.0018 870.5 93.4 6.13 0.814
 0.400 -7.931 6.982 5.10 -0.0119 882.1 101.8 6.58 0.826
 0.500 -7.972 6.545 7.34 -0.0112 887.5 114.1 7.32 0.831
 0.600 -8.010 6.067 9.83 -0.0026 879.0 124.6 8.07 0.822
 0.700 -8.024 5.534 12.80 0.0142 858.4 130.7 8.66 0.801
 0.800 -7.995 4.918 16.58 0.0151 823.6 132.6 9.15 0.766
 0.900 -7.946 4.149 21.93 0.0129 772.4 136.8 10.04 0.716
 0.950 -7.936 3.647 25.27 0.0115 737.3 141.8 10.89 0.681
 1.000 -7.941 2.971 28.21 0.0136 690.1 149.3 12.21 0.635

STA 12.000 MASS AVERAGED PROPERTIES
 PT= 16.585 TT= 539.12 GAMMA=1.4018 PT-RAT= 1.129 TT-RAT= 1.039
 RCU= 694.0 VM= 841.8 CZ= 823.9 MM=0.785 MABS=0.792 MREL=1.231

RCTOR1
 WFF= 61.365 I=10 STA= 12.500 AFLOW= 162.19 D*H=O. D*H=O.
 PSIC Z OPTX=TT R PHI OPTY=PT ITYPE=5 INBR=3 ABC=O. ABH=O.
 0. -7.556 8.500 0. 0. 775.6 150.5 10.98 0.704
 0.050 -7.565 8.322 -0.31 -0.0117 788.6 158.1 11.34 0.717
 0.100 -7.576 8.144 -0.15 0.0009 797.9 162.5 11.52 0.726
 0.200 -7.606 7.780 1.02 0.0251 817.9 168.2 11.62 0.746
 0.300 -7.536 7.403 2.87 0.0291 833.2 170.6 11.57 0.763
 0.400 -7.664 7.006 4.98 0.0278 850.0 178.1 11.84 0.781
 0.500 -7.692 6.581 7.18 0.0309 866.8 190.3 12.38 0.798
 0.600 -7.719 6.117 9.64 0.0247 873.6 201.6 12.99 0.806
 0.700 -7.724 5.601 12.59 0.0100 864.1 212.4 13.81 0.798
 0.800 -7.690 5.008 16.36 0.0097 837.7 226.1 15.10 0.772
 0.900 -7.645 4.269 21.60 0.0226 798.0 241.5 16.84 0.734
 0.950 -7.641 3.786 25.06 0.0104 768.0 242.8 17.54 0.706
 1.000 -7.658 3.123 28.51 -0.0461 711.7 236.3 18.37 0.653

IN ROTOR
 SL BLDLIK PS PT TT BETAM VREL MREL VABS MABS
 1 0.912 12.329 17.377 556.4 60.11 1556.5 1.413 790.1 0.717
 2 0.911 12.345 17.616 557.4 58.96 1529.5 1.390 804.3 0.731
 3 0.910 12.346 17.780 557.7 57.95 1503.7 1.368 814.3 0.741
 4 0.906 12.261 18.020 557.2 55.83 1456.2 1.329 835.1 0.762
 5 0.898 12.129 18.118 555.9 53.74 1408.7 1.290 850.5 0.779
 6 0.886 11.997 18.256 555.4 51.23 1357.3 1.247 868.5 0.798
 7 0.868 11.858 18.404 555.6 48.24 1301.6 1.199 887.5 0.817
 8 0.849 11.756 18.432 555.0 45.14 1238.6 1.143 896.6 0.828
 9 0.829 11.780 18.357 553.7 41.93 1161.5 1.072 889.8 0.821
 10 0.802 11.941 18.207 552.0 38.13 1065.0 0.982 867.7 0.800
 11 0.776 12.101 17.869 549.0 32.68 948.1 0.872 833.7 0.767
 12 0.728 12.139 17.482 545.7 28.97 877.9 0.807 805.5 0.741
 13 0.683 12.289 16.876 540.4 23.86 778.2 0.714 749.9 0.688

STA 12.500 MASS AVERAGED PROPERTIES
 PT= 18.062 TT= 554.06 GAMMA=1.4017 PT-RAT= 1.229 TT-RAT= 1.068
 RCU= 1201.5 VM= 829.1 CZ= 811.3 MM=0.761 MABS=0.782 MREL=1.157

ROTOR 1 STA= 13.000
 WTF= 61.365 I=11 MTIP=131 AFLOW= 155.54 D+C=O. D+H=O.
 PSIC Z R OPTX=TT OPTV=PT PHI INBR=3 VM CU ALPHAM MM ABH=O.
 0. -7.352 8.500 0. 0. 0. 740.6 206.0 15.55 0.662
 0.050 -7.352 8.321 -0.46 0.0364 759.6 214.9 15.80 0.680
 0.100 -7.354 8.143 -0.43 0.0444 777.7 221.2 15.87 0.697
 0.200 -7.367 7.784 0.62 0.0337 808.9 229.6 15.84 0.729
 0.300 -7.382 7.415 2.45 0.0279 826.4 232.6 15.72 0.748
 0.400 -7.397 7.028 4.51 0.0335 844.1 239.8 15.86 0.767
 0.500 -7.413 6.615 6.79 0.0182 862.2 253.9 16.41 0.786
 0.600 -7.429 6.166 9.28 0.0178 871.3 269.5 17.19 0.796
 0.700 -7.425 5.668 12.25 0.0285 872.7 285.4 18.11 0.799
 0.800 -7.386 5.096 16.11 0.0177 861.6 302.3 19.33 0.790
 0.900 -7.344 4.387 21.34 0.0047 829.3 320.0 21.10 0.761
 0.950 -7.346 3.923 25.14 -0.0185 801.1 321.6 21.87 0.735
 1.000 -7.375 3.281 29.92 -0.1052 736.3 318.7 23.41 0.674

SL BLDLCK PS PT TT BETAM VREL MREL VABS MABS
 1 0.893 13.441 18.431 570.2 60.21 1490.9 1.332 768.8 0.687
 2 0.893 13.433 18.742 571.3 58.79 1465.7 1.311 789.4 0.706
 3 0.892 13.375 18.981 571.7 57.39 1443.3 1.294 808.6 0.725
 4 0.887 13.223 19.345 571.3 54.74 1401.1 1.262 840.8 0.757
 5 0.880 13.077 19.489 569.4 52.47 1356.7 1.227 858.5 0.777
 6 0.866 12.913 19.630 568.3 49.85 1309.0 1.189 877.5 0.797
 7 0.848 12.743 19.804 568.1 46.65 1256.0 1.144 898.8 0.819
 8 0.828 12.605 19.873 567.6 43.21 1195.5 1.092 912.0 0.833
 9 0.805 12.472 19.817 566.3 39.32 1128.1 1.033 918.2 0.841
 10 0.777 12.384 19.608 564.0 34.72 1048.2 0.961 913.1 0.837
 11 0.748 12.351 19.126 560.0 28.71 945.6 0.867 888.9 0.815
 12 0.702 12.298 18.609 555.8 24.84 882.8 0.810 863.3 0.792
 13 0.655 12.463 17.848 549.5 19.47 780.9 0.715 802.3 0.735

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STA 13.000 MASS AVERAGED PROPERTIES
 PT= 19.385 TT= 566.74 GAMMA=1.4016 PT-RAT= 1.319 TT-RAT= 1.093
 RCU= 1632.4 VM= 830.2 CZ= 812.2 MM=0.755 MABS=0.792 MREL=1.110

ROTOR 1 STA= 13.500
 WTF= 61.365 I=12 MTIP=144 AFLOW= 151.15 D+C=0. D+H=0.
 PSIC Z OPTX=TT PHI CURV VM CU ALPHAM MM
 0 -7.148 8.500 0. 0. 702.8 249.9 19.58 0.620
 0.050 -7.139 8.319 -0.57 -0.0184 726.8 266.0 20.10 0.641
 0.100 -7.132 8.140 -0.63 -0.0142 748.0 281.0 20.59 0.661
 0.200 -7.128 7.786 0.28 0.0155 781.5 298.6 20.91 0.693
 0.300 -7.129 7.425 2.01 0.0327 800.7 302.1 20.67 0.713
 0.400 -7.130 7.048 4.10 0.0203 816.6 308.2 20.68 0.731
 0.500 -7.133 6.647 6.37 0.0338 835.9 321.6 21.05 0.751
 0.600 -7.138 6.213 8.87 0.0314 851.8 335.4 21.49 0.769
 0.700 -7.125 5.732 11.84 0.0179 860.1 355.2 22.44 0.779
 0.800 -7.081 5.183 15.91 0.0043 854.6 379.6 23.95 0.776
 0.900 -7.043 4.505 21.43 -0.0142 829.3 405.9 26.08 0.755
 0.950 -7.051 4.063 25.60 -0.0308 809.8 409.9 26.85 0.739
 1.000 -7.092 3.450 31.86 -0.0937 762.7 402.5 27.82 0.697

IN ROTOR
 MABS
 1 0.885 14.429 19.294 581.2 60.65 1434.1 1.264 745.9 0.658
 2 0.885 14.481 19.792 583.8 58.84 1404.7 1.240 774.0 0.683
 3 0.884 14.526 20.260 586.0 57.08 1376.5 1.216 799.1 0.706
 4 0.880 14.508 20.913 587.1 53.99 1329.3 1.179 836.6 0.742
 5 0.872 14.363 21.116 584.7 51.54 1287.4 1.147 855.8 0.763
 6 0.857 14.189 21.236 582.6 48.89 1241.8 1.111 872.8 0.781
 7 0.839 13.954 21.382 581.6 45.53 1193.2 1.072 895.6 0.805
 8 0.818 13.642 21.361 580.0 41.78 1142.2 1.031 915.4 0.826
 9 0.795 13.388 21.326 578.6 37.34 1081.8 0.980 930.5 0.843
 10 0.768 13.192 21.157 576.6 32.05 1008.3 0.916 935.2 0.850
 11 0.738 12.986 20.634 572.5 25.14 916.0 0.834 923.3 0.841
 12 0.699 12.746 20.000 567.7 20.77 866.0 0.790 907.6 0.828
 13 0.649 12.590 18.978 559.6 15.14 790.1 0.722 862.4 0.788

STA 13.500 MASS AVERAGED PROPERTIES
 PT= 20.856 TT= 580.10 GAMMA=1.4015 PT-RAT= 1.419 TT-RAT= 1.118
 RCU= 2087.0 VM= 811.9 CZ= 793.8 MM=0.729 MABS=0.789 MREL=1.049

ROTOR 1 STA= 14.000
 WTF= 61.365 I=13 MTIP=157 AFLOW= 147.59 D+C=0. D+H=0.
 PSIC Z OPTX=TT PHI CURV VM CU ALPHAM MM
 0. -6.945 8.500 0. -0.0197 700.3 291.6 23.46 0.586
 0.050 -6.926 8.317 -0.33 -0.0255 724.5 329.6 24.09 0.611
 0.100 -6.910 8.138 -0.37 -0.0255 724.5 329.6 24.09 0.611
 0.200 -6.890 7.787 0.30 -0.0181 764.4 358.1 25.10 0.670
 0.300 -6.875 7.433 1.75 0.0039 783.5 368.2 25.17 0.690
 0.400 -6.863 7.066 3.70 0.0316 800.3 374.8 25.10 0.708
 0.500 -6.853 6.677 5.88 0.0271 819.2 384.4 25.14 0.728
 0.600 -6.847 6.257 8.43 0.0210 834.9 399.4 25.56 0.746
 0.700 -6.825 5.794 11.59 0.0110 843.2 421.9 26.58 0.756
 0.800 -6.777 5.270 15.91 -0.0047 845.7 455.4 28.30 0.762
 0.900 -6.742 4.624 21.83 -0.0286 826.0 484.4 30.39 0.747
 0.950 -6.756 4.206 26.35 -0.0486 811.6 492.1 31.23 0.737
 1.000 -6.809 3.632 33.48 -0.0749 785.6 490.0 31.95 0.717

SL BDBLK PS PT TT BETAM VREL MREL VABS MABS
 1 0.878 15.334 20.180 591.6 60.92 1382.7 1.206 732.5 0.639
 2 0.879 15.403 20.801 595.3 58.76 1350.4 1.178 767.1 0.669
 3 0.879 15.463 21.364 597.6 56.79 1322.7 1.155 796.0 0.695
 4 0.874 15.519 22.326 600.7 53.05 1271.5 1.114 844.1 0.740
 5 0.866 15.475 22.736 599.2 50.29 1226.4 1.079 865.7 0.762
 6 0.852 15.292 22.896 596.6 47.46 1183.7 1.047 883.7 0.782
 7 0.834 14.974 22.935 594.2 44.10 1140.8 1.014 904.9 0.804
 8 0.814 14.624 22.911 592.2 40.17 1092.6 0.976 925.5 0.827
 9 0.793 14.315 22.869 590.6 35.46 1035.2 0.929 942.9 0.846
 10 0.770 13.989 22.803 589.3 29.30 969.8 0.873 960.5 0.865
 11 0.739 13.590 22.174 584.6 21.87 890.0 0.805 957.6 0.866
 12 0.713 13.221 21.469 579.6 17.13 849.2 0.771 949.1 0.862
 13 0.662 12.738 20.324 571.1 10.87 800.0 0.730 925.9 0.845

STA 14.000 MASS AVERAGED PROPERTIES
 PT= 22.329 TT= 592.76 GAMMA=1.4014 PT-RAT= 1.519 TT-RAT= 1.143
 RCU= 2517.6 VM= .37.4 CZ= 779.0 MM=0.709 MABS=0.793 MREL=0.996

ROTOR1 STA= 14.500 IN ROTOR
 WTF= 61.365 I=14 MTIP=170 AFLOW= 145.34 D+C=O. D+H=O.
 PSIC Z OPTX=TT PHI ITYPE=5 INBR=3 ABC=O. ABH=O.
 CURV VM CU ALPHAM MM
 0. -6.741 8.500 0. 0 637.7 356.8 29.23 0.548
 0.050 -6.713 8.316 -0.15 -0.0099 666.5 375.4 29.39 0.574
 0.100 -6.688 8.138 -0.08 -0.0212 691.3 392.8 29.61 0.596
 0.200 -6.651 7.788 0.54 -0.0167 735.1 420.5 29.77 0.636
 0.300 -6.621 7.441 1.70 0.0026 757.8 431.5 29.66 0.659
 0.400 -6.596 7.083 3.39 0.0097 775.5 438.4 29.48 0.678
 0.500 -6.573 6.705 5.61 0.0066 791.5 450.9 29.67 0.695
 0.600 -6.556 6.299 8.21 0.0046 805.9 467.5 30.12 0.712
 0.700 -6.525 5.855 11.53 -0.0041 814.4 491.9 31.13 0.723
 0.800 -6.473 5.357 16.10 -0.0156 822.0 528.1 32.72 0.733
 0.900 -6.441 4.746 22.53 -0.0463 815.1 564.4 34.70 0.732
 0.950 -6.461 4.356 27.49 -0.0717 805.7 577.6 35.63 0.727
 1.000 -6.526 3.824 34.87 -0.0668 795.8 588.7 36.49 0.723

SL BLDLCK PS PT TT BETAM VREL MREL VABS MABS
 1 0.877 16.567 21.609 607.9 60.84 1309.0 1.125 730.8 0.628
 2 0.878 15.653 22.277 610.5 58.61 1279.5 1.101 765.0 0.658
 3 0.878 16.713 22.884 612.7 56.47 1251.5 1.078 795.1 0.685
 4 0.874 16.753 23.948 615.0 52.38 1204.3 1.042 846.9 0.733
 5 0.867 16.678 24.420 613.1 49.32 1162.5 1.011 872.0 0.758
 6 0.855 16.489 24.625 610.0 46.30 1122.5 0.981 890.8 0.779
 7 0.837 16.179 24.678 607.6 42.78 1078.3 0.948 910.9 0.800
 8 0.821 15.801 24.652 605.3 38.63 1031.7 0.911 931.7 0.823
 9 0.803 15.425 24.601 603.4 33.61 977.9 0.868 951.4 0.844
 10 0.786 14.942 24.521 601.9 26.92 921.8 0.822 977.0 0.872
 11 0.753 14.273 23.897 597.5 18.53 859.7 0.772 991.5 0.890
 12 0.745 13.778 23.170 592.7 13.34 828.1 0.747 991.4 0.894
 13 0.696 13.028 22.035 584.9 6.18 800.5 0.728 989.9 0.900

STA 14.500 MASS AVERAGED PROPERTIES
 PT= 24.006 TT= 606.38 GAMMA=1.4012 PT-RAT= 1.633 TT-RAT= 1.169
 RCU= 2981.3 VM= 772.6 CZ= 753.6 MM=0.680 MABS=0.795 MREL=0.936

ROTOR1 STA= 15.000
 WTF= 61.365 I=15 MTIP=183 AFLOW= 144.25 D+C=O. D*H=O.
 PSIC Z OPTX=TT PHI OPTV=PT ITYPE=S INBR=3 ABC=O. ABH=O.
 0. -6.538 8.500 0. 0. 598.3 453.1 37.14 0.505
 0.050 -6.500 8.316 -0.08 -0.0023 627.8 465.1 36.53 0.531
 0.100 -6.466 8.138 -0.01 0.0110 653.3 475.3 36.04 0.554
 0.200 -6.412 7.791 0.55 0.0152 700.3 483.4 34.61 0.599
 0.300 -6.367 7.448 1.67 0.0008 726.7 492.8 34.14 0.625
 0.400 -6.328 7.098 3.40 -0.0115 745.4 501.7 33.94 0.645
 0.500 -6.295 6.732 5.65 -0.0117 760.3 514.3 34.08 0.661
 0.600 -6.265 6.341 8.32 -0.0177 772.0 533.7 34.66 0.674
 0.700 -6.225 5.916 11.78 -0.0248 779.7 559.3 35.65 0.685
 0.800 -6.168 5.446 16.48 -0.0265 791.2 597.0 37.04 0.699
 0.900 -6.139 4.874 23.48 -0.0559 801.2 644.0 38.79 0.714
 0.950 -6.166 4.513 28.67 -0.0516 806.6 671.3 39.77 0.724
 1.000 -6.243 4.026 36.12 -0.0570 810.9 710.2 41.21 0.735

SL	BDBLK	PS	PT	TT	BETAM	VREL	MREL	VABS	MABS
1	0.881	18.155	23.777	631.9	60.25	1205.8	1.017	750.5	0.633
2	0.882	18.211	24.416	632.4	57.94	1182.8	1.000	781.4	0.661
3	0.883	18.214	24.943	632.4	55.78	1161.8	0.986	808.0	0.685
4	0.880	18.096	25.738	629.4	51.85	1133.7	0.969	850.9	0.727
5	0.874	17.919	26.154	626.6	48.51	1096.8	0.943	878.0	0.755
6	0.865	17.715	26.407	623.4	45.21	1058.1	0.915	898.6	0.777
7	0.851	17.401	26.477	620.5	41.55	1015.9	0.883	917.9	0.798
8	0.839	17.004	26.448	618.2	37.17	968.8	0.846	938.5	0.820
9	0.826	16.577	26.390	616.0	31.87	918.1	0.806	959.6	0.843
10	0.815	15.950	26.295	614.3	24.71	870.9	0.770	991.2	0.876
11	0.785	14.982	25.810	611.0	15.10	829.9	0.740	1027.9	0.916
12	0.790	14.247	25.244	607.8	8.82	816.2	0.733	1049.4	0.942
13	0.743	13.223	24.388	602.8	0.01	810.9	0.735	1078.0	0.977

STA 15.000 MASS AVERAGED PROPERTIES
 PT= 25.878 TT= 620.97 GAMMA=1.4010 PT-RAT= 1.761 TT-RAT= 1.197
 RCU= 3478.6 VM= 743.6 CZ= 723.5 MM=0.648 MABS=0.800 MREL=0.873

ROTOR1 STA= 15.500
 WTF= 61.365 I=16 MTIP=196 AFLOW= 145.07 D+C=O. D+H=O.
 PSIC Z OPTX=TT R OPTV=PT PHI CURV VM CU ALPHAM MM ABH=O.

SL	BDBLK	PS	PT	TT	BETAM	VREL	MREL	VABS	MABS
1	0.898	19.394	25.568	650.2	60.00	1124.1	0.935	770.2	0.641
2	0.899	19.378	26.071	648.4	57.67	1108.4	0.926	795.7	0.665
3	0.899	19.310	26.464	646.1	55.52	1095.6	0.920	817.6	0.686
4	0.898	19.159	27.205	641.8	51.43	1071.4	0.907	857.4	0.726
5	0.894	19.015	27.694	638.0	47.94	1038.8	0.885	883.6	0.753
6	0.889	18.842	27.994	634.6	44.53	1000.1	0.857	903.1	0.774
7	0.881	18.567	28.080	631.5	40.84	956.5	0.823	919.7	0.792
8	0.874	18.207	28.050	629.1	36.44	906.6	0.784	937.0	0.810
9	0.868	17.752	27.985	626.7	30.95	857.5	0.745	958.2	0.833
10	0.862	17.041	27.876	624.8	23.51	816.0	0.714	992.3	0.868
11	0.842	15.739	27.505	622.4	12.98	799.2	0.707	1050.0	0.929
12	0.847	14.803	27.101	620.5	6.12	801.5	0.715	1087.6	0.971
13	0.800	13.254	26.566	618.3	-3.59	837.5	0.759	1156.9	1.048

STA 15.500 MASS AVERAGED PROPERTIES
 PT= 27.493 TT= 632.94 GAMMA=1.4008 PT-RAT= 1.871 TT-RAT= 1.220
 RCU= 3886.8 VM= 710.7 CZ= 689.7 MM=0.613 MABS=0.801 MREL=0.818

ROTOR 1 STA= 16.000 AFLOW= 148.35 D+C=0. D*H=0. TE ROTOR
 WTF= 61.365 MTIP=209 I=17 GPTV=PT ITYPE=6 INBR=3 ABC=0. ABH=0.
 PSIC Z R PHI CURV VM CU ALPHAM MM
 0. -6.131 8.500 0. 0. 520.2 567.1 47.47 0.429
 0.050 -6.073 8.314 -0.37 -0.0438 560.3 570.0 45.49 0.465
 0.100 -6.022 8.136 -0.09 -0.0600 588.4 571.9 44.19 0.490
 0.200 -5.935 7.795 1.04 -0.0802 634.5 577.2 42.29 0.533
 0.300 -5.860 7.465 2.64 -0.0849 659.5 584.4 41.55 0.557
 0.400 -5.794 7.134 4.58 -0.0763 673.3 594.4 41.44 0.572
 0.500 -5.734 6.792 6.89 -0.0599 678.7 608.2 41.86 0.579
 0.600 -5.683 6.432 9.63 -0.0378 680.6 629.5 42.77 0.583
 0.700 -5.626 6.048 12.94 -0.0156 687.5 654.8 43.60 0.592
 0.800 -5.560 5.633 17.25 0.0221 700.7 690.4 44.58 0.608
 0.900 -5.537 5.145 23.80 0.0935 725.2 746.5 45.83 0.636
 0.950 -5.576 4.846 28.32 0.1745 757.6 792.0 46.27 0.670
 1.000 -5.677 4.442 35.49 0.0883 781.8 870.1 48.06 0.700

SL BLDBLK PS PT TT BETAM VREL MREL VABS MABS
 1 0.926 20.245 26.560 660.3 60.86 1068.1 0.882 769.6 0.635
 2 0.927 20.194 27.120 657.9 58.02 1057.7 0.877 799.2 0.663
 3 0.927 20.157 27.560 655.4 55.74 1045.2 0.871 820.6 0.684
 4 0.927 20.091 28.390 650.9 51.53 1019.8 0.857 857.8 0.720
 5 0.928 20.023 28.940 646.9 48.02 985.9 0.833 881.2 0.745
 6 0.928 19.910 29.280 643.3 44.63 946.0 0.804 898.1 0.763
 7 0.928 19.696 29.380 640.1 41.03 899.6 0.768 911.3 0.778
 8 0.928 19.355 29.350 637.7 36.61 847.8 0.727 927.0 0.795
 9 0.928 18.858 29.280 635.1 30.96 801.8 0.691 949.4 0.818
 10 0.928 18.112 29.160 633.0 23.43 763.6 0.663 983.7 0.853
 11 0.930 16.870 28.920 631.6 12.56 743.0 0.651 1040.7 0.912
 12 0.914 15.740 28.770 631.5 4.77 760.2 0.672 1095.9 0.969
 13 0.875 14.297 28.650 632.3 -6.30 786.6 0.704 1169.8 1.048

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STA 16.000 MASS AVERAGED PROPERTIES
 PT= 28.783 TT= 642.01 GAMMA=1.4006 PT-RAT= 1.959 TT-RAT= 1.238
 RCU= 4196.1 VM= 668.4 CZ= 649.0 MM=0.572 MABS=0.791 MREL=0.765

AVERAGE BLADE SPEED ACC PT ACC TT EFFICIENCY AXIAL
 PCT IMM RAD IN OUT RATIO RATIO AD. POLY VEL R
 0. 8.500 1500.0 1500.0 1.8073 1.2730 0.675 0.701 0.625
 3.7 8.318 1468.6 1467.1 1.8454 1.2684 0.713 0.737 0.671
 7.3 8.138 1436.4 1435.7 1.8753 1.2636 0.747 0.768 0.704
 14.6 7.779 1369.7 1375.6 1.9318 1.2549 0.812 0.829 0.760
 21.9 7.414 1299.2 1317.3 1.9692 1.2472 0.865 0.877 0.795
 29.6 7.035 1224.0 1258.9 1.9924 1.2402 0.907 0.915 0.823
 37.7 6.634 1142.7 1198.6 1.9992 1.2341 0.936 0.942 0.851
 46.4 6.200 1053.2 1135.1 1.9971 1.2294 0.953 0.957 0.889
 56.1 5.723 952.4 1067.3 1.9924 1.2244 0.971 0.973 0.952
 67.0 5.184 835.6 994.0 1.9842 1.2204 0.982 0.984 1.041
 80.3 4.525 689.0 908.0 1.9679 1.2177 0.981 0.983 1.183
 88.8 4.104 593.2 855.1 1.9577 1.2175 0.974 0.976 1.323
 100.0 3.547 468.2 783.8 1.9495 1.2190 0.960 0.964 1.346

FREE STA= 17.000 AFLOW= 146.24 D+C=O. FREE D+H=O.
 WTF= 61.365 MTIP=222 OPTX=DPP OPTY=FREE ITYPE=O INBR=O ABC=O. ABH=O.
 PSIC Z R PHI CURV VM CU ALPHAM MM
 0. -5.700 8.500 0. 0. 0. 509.7 567.1 48.05 0.420
 0.050 -5.639 8.315 0.73 -0.0445 558.8 569.9 45.56 0.463
 0.100 -5.587 8.141 1.44 -0.0632 592.2 571.6 43.98 0.494
 0.200 -5.499 7.811 2.90 -0.0684 646.1 576.1 41.72 0.543
 0.300 -5.430 7.492 4.39 -0.0563 676.7 582.3 40.71 0.573
 0.400 -5.375 7.173 5.97 -0.0394 695.7 591.1 40.35 0.592
 0.500 -5.333 6.845 7.79 -0.0178 704.3 603.5 40.59 0.602
 0.600 -5.305 6.498 9.98 0.0054 707.3 623.1 41.38 0.608
 0.700 -5.294 6.125 12.76 0.0336 712.8 646.6 42.21 0.615
 0.800 -5.304 5.711 16.55 0.0685 717.0 680.9 43.52 0.623
 0.900 -5.351 5.225 22.40 0.1474 726.3 735.1 45.34 0.636
 0.950 -5.405 4.934 26.18 0.2132 742.3 777.8 46.34 0.654
 1.000 -5.521 4.550 33.90 0.2101 731.0 849.4 49.29 0.649

SL BLDLTK PS PT TT BETAM VREL MREL VABS MABS
 1 0.940 20.329 26.533 660.3 61.35 1063.1 0.877 762.5 0.629
 2 0.940 20.191 27.093 657.9 58.09 1057.2 0.877 798.1 0.662
 3 0.940 20.097 27.532 655.4 55.60 1048.3 0.874 823.1 0.686
 4 0.940 19.956 28.390 650.9 51.15 1030.1 0.866 865.7 0.728
 5 0.940 19.818 28.940 646.9 47.55 1002.6 0.849 892.7 0.756
 6 0.940 19.641 29.280 643.3 44.12 969.2 0.825 912.9 0.777
 7 0.940 19.398 29.380 640.1 40.64 928.1 0.794 927.5 0.793
 8 0.940 19.066 29.350 637.7 36.52 880.1 0.756 942.6 0.810
 9 0.940 18.617 29.280 635.1 31.35 834.6 0.721 962.4 0.831
 10 0.940 18.015 29.160 633.0 24.51 788.0 0.684 988.8 0.859
 11 0.940 17.009 28.920 631.6 14.44 750.0 0.657 1033.4 0.905
 12 0.940 16.132 28.770 631.5 7.13 748.1 0.659 1075.2 0.948
 13 0.940 15.176 28.564 632.3 -3.64 732.5 0.650 1120.7 0.995

STA 17.000 MASS AVERAGED PROPERTIES
 PT= 28.777 TT= 642.01 GAMMA=1.4006 PI-RAT= 1.958 IT-RAT= 1.238
 RCU= 4196.1 VM= 681.0 CZ= 662.8 MM=0.583 MABS=0.796 MREL=0.779

STATOR
 WTF= 61.365 I=20 STA= 19.000
 PSIC Z OPTX=DPP OPTV=BETM AFLOW= 126.03 IN BR=4 D=C=O. D*H=O.
 PHI R ABH=O.
 0.050 -4.770 8.500 0.050 614.0 375.1 31.42 0.504
 0.100 -4.724 8.335 1.06 643.2 384.2 30.86 0.531
 0.200 -4.683 8.177 1.94 666.7 390.9 30.38 0.553
 0.300 -4.617 7.870 3.43 711.4 405.6 29.69 0.595
 0.400 -4.567 7.570 4.78 742.5 416.4 29.29 0.625
 0.500 -4.532 7.270 6.19 765.0 426.4 29.13 0.648
 0.600 -4.512 6.962 7.79 779.2 435.8 29.22 0.663
 0.700 -4.508 6.639 9.73 791.1 447.6 29.50 0.676
 0.800 -4.524 6.295 12.13 806.1 466.3 30.05 0.693
 0.900 -4.565 5.921 15.19 826.6 495.3 30.93 0.715
 0.950 -4.641 5.495 19.46 856.8 536.5 32.05 0.747
 1.000 -4.696 5.253 22.42 881.8 564.2 32.61 0.774
 1.000 -4.770 4.975 26.23 913.5 602.2 33.40 0.807

SL BLDLCK PS PT TT BETAM VREL MREL VABS MABS
 1 0.875 20.954 26.533 660.3 61.37 1281.6 1.052 719.5 0.591
 2 0.877 20.937 27.093 657.9 59.38 1262.8 1.042 749.2 0.618
 3 0.878 20.891 27.532 655.4 57.64 1245.5 1.032 772.8 0.641
 4 0.879 20.744 28.390 650.9 54.11 1213.5 1.015 819.0 0.685
 5 0.880 20.546 28.940 646.9 51.08 1181.8 0.995 851.3 0.717
 6 0.881 20.310 29.280 643.3 48.23 1148.4 0.973 875.8 0.742
 7 0.880 20.034 29.380 640.1 45.50 1111.6 0.946 892.7 0.760
 8 0.880 19.688 29.350 637.7 42.47 1072.4 0.917 908.9 0.777
 9 0.878 19.196 29.280 635.1 38.65 1032.2 0.887 931.3 0.800
 10 0.875 18.487 29.160 633.0 33.61 992.6 0.859 963.6 0.834
 11 0.867 17.432 28.920 631.6 26.83 960.2 0.838 1010.9 0.882
 12 0.857 16.666 28.770 631.5 22.37 953.5 0.837 1046.9 0.918
 13 0.837 15.674 28.564 632.3 16.80 954.2 0.843 1094.1 0.967

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STA 19.000 MASS AVERAGED PROPERTIES
 PT= 28.777 TT= 642.01 GAMMA=1.4005 PT-RAT= 1.958 TT-RAT= 1.238
 RCU= 3055.6 VM= 770.9 CZ= 754.1 MM=0.657 MABS=0.761 MREL=0.941

STATOR
 WTF= 61.365 I=21 STA= 20.000
 PSIC Z OPTX=DPP R MTIP=261 AFLOW= 118.87 IN BR=4 D=C=O. D*H=O.
 O. 0.050 -4.277 8.341 0.63 0.0044 652.8 261.4 21.82 0.535
 O. 100 -4.258 8.188 1.26 0.0088 682.7 270.9 21.64 0.563
 O. 200 -4.225 7.889 2.57 0.0163 705.1 277.6 21.49 0.584
 O. 300 -4.201 7.597 3.93 0.0217 746.2 290.0 21.24 0.623
 O. 400 -4.184 7.305 5.39 0.0263 772.7 297.1 21.03 0.649
 O. 500 -4.174 7.006 7.03 0.0332 791.1 302.1 20.90 0.668
 O. 600 -4.173 6.695 8.93 0.0431 801.7 305.5 20.86 0.680
 O. 700 -4.180 6.367 11.15 0.0554 810.7 310.0 20.93 0.689
 O. 800 -4.199 6.016 13.86 0.0750 822.6 318.2 21.15 0.702
 O. 900 -4.233 5.631 17.33 0.0867 840.5 332.6 21.59 0.721
 O. 950 -4.261 5.420 19.55 0.0993 851.1 353.1 22.20 0.746
 1.000 -4.300 5.188 22.50 0.1259 865.1 365.7 22.52 0.763
 1.000 -4.300 5.188 22.50 0.1259 882.1 381.9 22.91 0.784

SL BLDLCK PS PT TT BETAM VREL MREL VABS MABS
 1 0.849 21.184 26.533 660.3 62.21 1400.1 1.148 703.2 0.577
 2 0.851 21.156 27.093 657.9 60.39 1381.6 1.138 734.5 0.605
 3 0.852 21.124 27.532 655.4 58.87 1363.7 1.129 757.7 0.627
 4 0.855 21.048 28.390 650.9 55.90 1331.1 1.111 800.5 0.668
 5 0.857 20.950 28.940 646.9 53.48 1298.5 1.091 827.9 0.695
 6 0.859 20.824 29.280 643.3 51.28 1264.9 1.068 846.9 0.715
 7 0.860 20.660 29.380 640.1 49.26 1228.5 1.041 858.0 0.727
 8 0.860 20.432 29.350 637.7 47.07 1190.2 1.012 867.9 0.738
 9 0.858 20.098 29.280 635.1 44.39 1151.2 0.983 882.0 0.753
 10 0.855 19.590 29.160 633.0 40.94 1112.6 0.955 903.9 0.776
 11 0.847 18.855 28.920 631.6 36.52 1076.5 0.929 934.4 0.806
 12 0.840 18.379 28.770 631.5 33.81 1061.6 0.918 954.9 0.826
 13 0.828 17.781 28.564 632.3 30.56 1049.4 0.911 981.0 0.851

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STA 20.000 MASS AVERAGED PROPERTIES
 PT= 28.777 TT= 642.01 GAMMA=1.4004 PT-RAT= 1.958 TT-RAT= 1.238
 RCU= 2135.2 VM= 793.5 CZ= 780.0 MM=0.672 MABS=0.722 MREL=1.035

STATOR STA= 21.000 AFLOW= 115.15 D+C=0. D+H=O. IN STATOR
 WTF= 61.365 I-22 MTIP=274 OPTY=BETM I TYPE=2 INBR=4 ABC=0. ABH=O.
 PSIC Z R PHI CURV VM CL ALPHAM MM
 0. -3.800 8.500 0. 0. 669.0 169.3 14.20 0.548
 0.050 -3.800 8.346 0.53 0.0027 700.2 174.8 14.02 0.576
 0.100 -3.800 8.197 1.09 0.0046 723.2 178.4 13.86 0.598
 0.200 -3.800 7.907 2.25 0.0093 765.1 185.0 13.59 0.638
 0.300 -3.800 7.623 3.50 0.0157 791.3 188.7 13.41 0.664
 0.400 -3.800 7.339 4.84 0.0235 809.2 191.1 13.29 0.682
 0.500 -3.800 7.049 6.32 0.0328 819.0 192.2 13.21 0.693
 0.600 -3.800 6.750 7.99 0.0438 826.7 193.2 13.16 0.701
 0.700 -3.800 6.437 9.91 0.0564 836.0 196.2 13.20 0.712
 0.800 -3.800 6.108 12.15 0.0711 848.2 202.7 13.44 0.725
 0.900 -3.800 5.757 14.95 0.0978 864.3 212.2 13.79 0.741
 0.950 -3.800 5.571 16.62 0.1115 876.7 216.9 13.90 0.753
 1.000 -3.800 5.376 18.63 0.1266 891.1 221.8 13.98 0.766

SL BLDBLK PS PT TT BETAM VREL MREL VABS MABS
 1 0.849 21.367 26.533 660.3 63.31 1489.4 1.220 690.1 0.565
 2 0.850 21.344 27.093 657.9 61.66 1474.8 1.214 721.7 0.594
 3 0.851 21.320 27.532 655.4 60.30 1459.8 1.207 744.9 0.616
 4 0.853 21.267 28.390 650.9 57.70 1431.9 1.193 787.2 0.656
 5 0.855 21.195 28.940 646.9 55.62 1401.3 1.175 813.5 0.682
 6 0.856 21.094 29.280 643.3 53.76 1368.8 1.154 831.4 0.701
 7 0.858 20.957 29.380 640.1 52.09 1333.1 1.128 841.2 0.712
 8 0.858 20.771 29.350 637.7 50.36 1295.9 1.100 849.0 0.720
 9 0.859 20.516 29.280 635.1 48.35 1257.9 1.071 858.8 0.731
 10 0.858 20.168 29.160 633.0 45.90 1218.7 1.041 872.1 0.745
 11 0.855 19.664 28.920 631.6 42.92 1180.2 1.012 889.9 0.763
 12 0.854 19.323 28.770 631.5 41.15 1164.3 1.000 903.1 0.776
 13 0.852 18.924 28.564 632.3 39.20 1149.9 0.989 918.2 0.790

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STA 21.000 MASS AVERAGED PROPERTIES
 PT= 28.777 TT= 642.01 GAMMA=1.4003 PT-RAT= 1.958 TT-RAT= 1.238
 RCU= 1346.9 VM= 806.5 CZ= 796.3 MM=0.681 MABS=0.700 MREL=1.118

STATOR STA= 22.000
 WTF= 61.365 I=23 OPTX=DPP MTIP=287 AFLOW= 114.72 D+C=0. D+H=0.
 PSIC Z R PHI CURV VM CU ALPHAM MM ABH=0.

SL	BLDBLK	PS	PT	TT	BETAM	VREL	MREL	VABS	MABS
1	0.880	21.706	26.533	660.3	65.02	1563.0	1.277	665.3	0.544
2	0.880	21.696	27.093	657.9	63.50	1550.8	1.273	697.3	0.573
3	0.881	21.689	27.532	655.4	62.28	1537.3	1.268	720.4	0.594
4	0.882	21.660	28.390	650.9	59.94	1512.1	1.257	762.8	0.634
5	0.883	21.602	28.940	646.9	58.09	1483.4	1.240	789.3	0.660
6	0.893	21.510	29.280	643.3	56.47	1452.0	1.220	807.4	0.679
7	0.884	21.379	29.380	640.1	55.04	1417.0	1.195	817.2	0.689
8	0.885	21.204	29.350	637.7	53.58	1380.0	1.168	824.4	0.698
9	0.886	20.972	29.280	635.1	51.93	1342.5	1.140	833.1	0.707
10	0.886	20.685	29.160	633.0	50.03	1303.9	1.110	843.1	0.718
11	0.886	20.357	28.920	631.6	47.96	1262.3	1.077	851.1	0.726
12	0.887	20.151	28.770	631.5	46.76	1242.1	1.061	856.7	0.732
13	0.887	19.843	28.564	632.3	45.33	1224.1	1.046	866.6	0.740

IN STATOR
 D+C=0. D+H=0. ABH=0.

STA 22.000 MASS AVERAGED PROPERTIES
 PT= 28.777 TT= 642.01 GAMMA=1.4002 PT-RAT= 1.958 TT-RAT= 1.238
 RCU= 651.6 VM= 796.2 CZ= 789.1 MM=0.670 MABS=0.675 MREL=1.184

STATOR STA= 23.000 TE STATOR
 WTF= 61.365 I=24 MTIP=300 AFLOW= 118.17 D+C=0. D+H=0.
 OPTV=BETM ITYPE=3 INBR=4 ABC=0. ABH=0.
 PSIC Z R CURV VM CU ALPHAM MM
 0. -2.567 8.500 0. 654.7 0. 0. 0.535
 0.050 -2.581 8.358 0.49 0.0062 682.0 0. 0. 0.559
 0.100 -2.595 8.218 0.91 0.0090 699.8 0. 0. 0.576
 0.200 -2.622 7.948 1.68 0.0122 742.0 0. 0. 0.615
 0.300 -2.648 7.683 2.44 0.0180 767.8 0. 0. 0.641
 0.400 -2.674 7.419 3.26 0.0263 786.0 0. 0. 0.659
 0.500 -2.700 7.151 4.18 0.0374 795.7 0. 0. 0.670
 0.600 -2.727 6.875 5.22 0.0500 801.6 0. 0. 0.676
 0.700 -2.756 6.588 6.43 0.0650 810.1 0. 0. 0.686
 0.800 -2.785 6.291 8.01 0.0934 829.7 0. 0. 0.705
 0.900 -2.816 5.977 9.87 0.1247 829.5 0. 0. 0.706
 0.950 -2.833 5.809 10.79 0.1318 829.5 0. 0. 0.706
 1.000 -2.850 5.631 11.52 0.1267 817.6 0. 0. 0.694

SL BLDLCK PS PT TT BETAM VREL MREL VABS MABS
 1 0.940 21.498 26.109 660.3 66.42 1636.7 1.336 654.7 0.535
 2 0.940 21.499 26.581 657.9 65.18 1624.9 1.332 682.0 0.559
 3 0.940 21.495 26.910 655.4 64.24 1610.3 1.325 699.8 0.576
 4 0.940 21.479 27.731 650.9 62.12 1586.7 1.316 742.0 0.615
 5 0.940 21.449 28.269 646.9 60.48 1558.2 1.300 767.8 0.641
 6 0.940 21.396 28.639 643.3 59.02 1527.1 1.280 786.0 0.659
 7 0.940 21.307 28.780 640.1 57.77 1491.9 1.256 795.7 0.670
 8 0.940 21.173 28.769 637.7 56.55 1454.2 1.227 801.6 0.676
 9 0.940 20.986 28.749 635.1 55.13 1417.0 1.200 810.1 0.686
 10 0.940 20.699 28.851 633.0 53.23 1386.0 1.178 829.7 0.705
 11 0.940 20.256 28.251 631.6 51.81 1341.8 1.142 829.5 0.706
 12 0.940 19.975 27.860 631.5 51.02 1318.7 1.122 829.5 0.706
 13 0.940 19.674 27.159 632.3 50.55 1286.9 1.093 817.6 0.694

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STA 23.000 MASS AVERAGED PROPERTIES
 PT= 28.163 TT= 642.01 GAMMA=1.4001 PT-RAT= 1.916 TT-RAT= 1.238
 RCU= 0. VM= 780.4 CZ= 776.2 MM=0.655 MABS=0.655 MREL=1.244

AVERAGE BLADE SPEED ACC PT ACC TT EFFICIENCY AXIAL
 PCT IMM RAD IN OUT RATIO RATIO AD. POLY VEL R
 0. 8 500 1.7766 1.2730 0.654 0.681 1.193
 4.7 8.341 1.8088 1.2684 0.688 0.713 1.159
 9.3 8.188 1.8311 1.2636 0.716 0.739 1.133
 18.1 7.893 1.8870 1.2549 0.781 0.799 1.110
 26.6 7.606 1.9236 1.2472 0.832 0.847 1.097
 35.1 7.319 1.9487 1.2402 0.875 0.886 1.092
 43.8 7.026 1.9584 1.2341 0.905 0.914 1.090
 53.0 6.719 1.9576 1.2294 0.923 0.930 1.092
 62.6 6.394 1.9563 1.2244 0.942 0.948 1.098
 73.0 6.044 1.9632 1.2204 0.965 0.968 1.125
 84.8 5.649 1.9223 1.2177 0.944 0.949 1.145
 91.6 5.419 1.8958 1.2175 0.923 0.929 1.189
 100.0 5.137 1.8480 1.2190 0.876 0.887 1.171

EXIT STA= 24.000
 WTF= 61.365 I=25 MTIP=313 AFLOW= 116 57 D*H=O.
 PSIC Z OPTX=DPP R PHI OPTY=FREE I TYPE=O INBR=O CU ALPHAM MM
 0. -2.000 8.500 0. 0. 0. 672.1 0. 0. 0.550
 0.050 -2.000 8.362 0.32 0.0039 698.9 0. 0. 0.574
 0.100 -2.000 8.226 0.63 0.0079 716.4 0. 0. 0.590
 0.200 -2.000 7.963 1.18 0.0158 758.5 0. 0. 0.630
 0.300 -2.000 7.707 1.68 0.0232 785.3 0. 0. 0.656
 0.400 -2.000 7.451 2.15 0.0311 804.9 0. 0. 0.676
 0.500 -2.000 7.193 2.63 0.0400 816.0 0. 0. 0.688
 0.600 -2.000 6.928 3.12 0.0507 823.3 0. 0. 0.696
 0.700 -2.000 6.655 3.62 0.0642 833.2 0. 0. 0.707
 0.800 -2.000 6.373 4.11 0.0791 852.4 0. 0. 0.727
 0.900 -2.000 6.078 4.59 0.0996 849.0 0. 0. 0.724
 0.950 -2.000 5.921 4.85 0.1150 846.8 0. 0. 0.722
 1.000 -2.000 5.757 5.28 0.1260 833.6 0. 0. 0.709

SL BLDLCK PS PT TT BETAM VREL MREL VABS MABS
 1 0.950 21.267 26.109 660.3 65.86 1643.7 1.344 672.1 0.550
 2 0.950 21.264 26.581 657.9 64.66 1632.7 1.341 698.9 0.574
 3 0.950 21.256 26.910 655.4 63.73 1618.9 1.334 716.4 0.590
 4 0.950 21.224 27.731 650.9 61.64 1596.9 1.327 758.5 0.630
 5 0.950 21.166 28.269 646.9 60.00 1570.5 1.313 785.3 0.656
 6 0.950 21.081 28.639 643.3 58.53 1541.7 1.295 804.9 0.676
 7 0.950 20.963 28.780 640.1 57.26 1509.0 1.273 816.0 0.688
 8 0.950 20.803 28.769 637.7 56.04 1474.0 1.247 823.3 0.696
 9 0.950 20.589 28.749 635.1 54.64 1439.9 1.222 833.2 0.707
 10 0.950 20.302 28.851 633.0 52.84 1411.2 1.203 852.4 0.727
 11 0.950 19.921 28.251 631.6 51.63 1367.9 1.167 849.0 0.724
 12 0.950 19.683 27.860 631.5 50.98 1345.0 1.147 846.8 0.722
 13 0.950 19.413 27.159 632.3 50.63 1314.2 1.118 833.6 0.709

STA 24.000 MASS AVERAGED PROPERTIES
 PT= 28.163 TT= 642.01 GAMMA=1.4002 PT-RAT= 1.916 TT-RAT= 1.238
 RCU= 0. VM= 799.7 CZ= 798.6 MM=0.673 MABS=0.673 MREL=1.261

EXIT STA= 25.000
 WTF= 61.365 I=26 MTIP=326 AFLOW= 116.27 D*C=O. D*H=O.
 PSIC Z R OPTX=PPP PHI OPTV=FREE ITYPE=O INBR=O ABC=O. ABH=O.
 0.050 -1.270 8.500 0.19 0.0025 689.3 0. 0. 0. 0.564
 0.100 -1.270 8.365 0.36 0.0048 715.2 0. 0. 0. 0.588
 0.200 -1.270 7.974 0.66 0.0092 732.0 0. 0. 0. 0.604
 0.300 -1.270 7.722 0.91 0.0135 772.3 0. 0. 0. 0.643
 0.400 -1.270 7.471 1.13 0.0180 797.1 0. 0. 0. 0.667
 0.500 -1.270 7.217 1.32 0.0228 814.4 0. 0. 0. 0.685
 0.600 -1.270 6.955 1.47 0.0279 822.6 0. 0. 0. 0.694
 0.700 -1.270 6.685 1.58 0.0335 825.9 0. 0. 0. 0.699
 0.800 -1.270 6.406 1.62 0.0398 830.2 0. 0. 0. 0.704
 0.900 -1.270 6.112 1.54 0.0463 841.6 0. 0. 0. 0.716
 0.950 -1.270 5.956 1.41 0.0493 846.5 0. 0. 0. 0.703
 1.000 -1.270 5.790 0.00 0.1263 816.1 0. 0. 0. 0.693
 0. 0. 0. 0. 0. 796.4 0. 0. 0. 0.675

SL BLDLKLK PS PT TT BETAM VREL MREL VABS MABS
 1 0.956 21.036 26.109 660.3 65.32 1650.8 1.352 689.3 0.564
 2 0.956 21.034 26.581 657.9 64.15 1640.3 1.349 715.2 0.588
 3 0.956 21.028 26.910 655.4 63.26 1626.8 1.343 732.0 0.604
 4 0.956 21.008 27.731 650.9 61.24 1605.3 1.335 772.3 0.643
 5 0.956 20.973 28.269 646.9 59.68 1578.8 1.321 797.1 0.667
 6 0.956 20.922 28.639 643.3 58.30 1549.7 1.303 814.4 0.685
 7 0.956 20.851 28.780 640.1 57.14 1516.1 1.280 822.6 0.694
 8 0.956 20.758 28.769 637.7 56.06 1479.4 1.252 825.9 0.699
 9 0.956 20.640 28.749 635.1 54.86 1442.6 1.224 830.2 0.704
 10 0.956 20.491 28.851 633.0 53.33 1409.4 1.200 841.6 0.716
 11 0.956 20.307 28.251 631.6 52.54 1358.9 1.156 826.5 0.703
 12 0.956 20.200 27.860 631.5 52.17 1330.6 1.131 816.1 0.693
 13 0.956 20.016 27.159 632.3 52.07 1295.5 1.098 796.4 0.675

STA 25.000 MASS AVERAGED PROPERTIES
 PT= 28.163 TT= 642.01 GAMMA=1.4002 PT-RAT= 1.916 TT-RAT= 1.238
 RCU= 0. VM= 801.0 CZ= 800.8 MM=0.674 MABS=0.674 MREL=1.264

EXIT STA= 26.000 AFLOW= 116.28 FREE
 WTF= 61.365 I=27 MTIP=339 DPTV=FREE ITYPE=O INBR=O ABC=O. D+H=O.
 PSIC Z R CURV VM CU ALPHAM MM
 0. -0.350 8.500 0. 0. 707.0 0. 0. 0.580
 0.050 -0.350 8.367 0.11 -0.0000 732.1 0. 0. 0.603
 0.100 -0.350 8.237 0.21 -0.0000 748.1 0. 0. 0.619
 0.200 -0.350 7.982 0.37 -0.0000 786.1 0. 0. 0.655
 0.300 -0.350 7.732 0.49 -0.0000 808.2 0. 0. 0.677
 0.400 -0.350 7.483 0.57 -0.0000 822.1 0. 0. 0.692
 0.500 -0.350 7.230 0.61 -0.0000 826.0 0. 0. 0.698
 0.600 -0.350 6.969 0.61 -0.0000 824.0 0. 0. 0.697
 0.700 -0.350 6.699 0.55 -0.0000 821.5 0. 0. 0.696
 0.800 -0.350 6.418 0.40 -0.0000 824.4 0. 0. 0.700
 0.900 -0.350 6.120 0.11 -0.0000 797.9 0. 0. 0.677
 0.950 -0.350 5.961 -0.10 -0.0000 780.3 0. 0. 0.660
 1.000 -0.350 5.791 0. 0. 747.3 0. 0. 0.630

SL BLDBLK PS PT TT SETAM VREL MREL VABS MABS
 1 0.956 20.792 26.109 660.3 64.76 1658.3 1.360 707.0 0.580
 2 0.956 20.791 26.581 657.9 63.63 1648.0 1.358 732.1 0.603
 3 0.956 20.791 26.910 655.4 62.77 1634.7 1.352 748.1 0.619
 4 0.956 20.791 27.731 650.9 60.84 1613.0 1.344 786.1 0.655
 5 0.956 20.791 28.269 646.9 59.36 1585.9 1.329 808.2 0.677
 6 0.956 20.791 28.639 643.3 58.10 1555.5 1.309 822.1 0.692
 7 0.956 20.791 28.780 640.1 57.08 1519.9 1.284 826.0 0.698
 8 0.956 20.791 28.769 637.7 56.18 1480.4 1.252 824.0 0.697
 9 0.956 20.791 28.749 635.1 55.20 1439.6 1.220 821.5 0.696
 10 0.956 20.790 28.851 633.0 53.95 1400.9 1.190 824.4 0.700
 11 0.956 20.789 28.251 631.6 53.55 1342.8 1.139 797.9 0.677
 12 0.956 20.789 27.860 631.5 53.43 1309.7 1.108 780.3 0.660
 13 0.956 20.789 27.159 632.3 53.82 1266.0 1.067 747.3 0.630

STA 26.000 MASS AVERAGED PROPERTIES
 PT= 28.163 TT= 642.01 GAMMA=1.4002 PT-RAT= 1.916 TT-RAT= 1.238
 RCU= 0. VM= 799.2 CZ= 799.1 MM=0.672 MABS=0.672 MREL=1.264

PHASE V ROTOR

BLADE FORCES

THE FORCE CALCULATIONS ARE 'PER BLADE ROW'.
 TO FIND THE FORCE ON A SINGLE BLADE, DIVIDE BY 'NB'.
 THE FORCES ARE THAT OF THE AIR ON THE BLADES.
 POSITIVE AXIAL IS AFT; POSITIVE TANGENTIAL IS IN ROTATION DIRECTION.
 THE COLUMNS HEADED BY F-TAN*, F-AXL*, AND F-RAD* ARE THE TANGENTIAL,
 AXIAL, AND RADIAL FORCES PER INCH OF CHANGE IN R-AVG.

SL	R-AVG (IN.)	H-AVG (IN.)	F-TAN* (LB/IN)	F-AXL* (LB/IN)	F-RAD* (LB/IN)
1	8.500	0.	-296.2	-397.9	-10.8
2	8.318	0.182	-299.7	-399.4	-11.3
3	8.138	0.362	-304.2	-400.2	-11.3
4	7.779	0.721	-305.8	-394.8	-9.8
5	7.414	1.086	-303.0	-382.8	-8.5
6	7.035	1.465	-295.9	-362.2	-12.7
7	6.634	1.866	-286.0	-332.5	-13.8
8	6.200	2.300	-274.4	-297.3	-8.3
9	5.723	2.777	-262.5	-257.6	-16.0
10	5.184	3.316	-245.1	-207.8	-23.4
11	4.525	3.975	-214.2	-136.7	-25.5
12	4.104	4.396	-186.8	-82.9	-29.9
13	3.547	4.953	-165.3	-44.6	-31.5

NET TORQUE= -8000.6 IN-LB
 NET TAN. FORCE= -1279.2 LB
 NET AXIAL FORCE= -1298.0 LB
 NET RADIAL FORCE= -86.4 LB

2. STREAMSURFACE BLADE COORDINATES

Figure 78 shows the stacked Phase V rotor streamsurface sections. Each page of the following tabulation gives the coordinates for one of these sections. The streamline designation for these sections corresponds to the calculation streamlines of the circumferential average flow calculation. Streamline 1 is at the casing and streamline 13 is at the hub. Also given in the tabulations are coordinates for the section meanline, the meanline angle, and the section thickness at each point. Streamsurface section chord, camber angle, and stagger angle are also given. All dimensions in this tabulation are in inches or degrees.

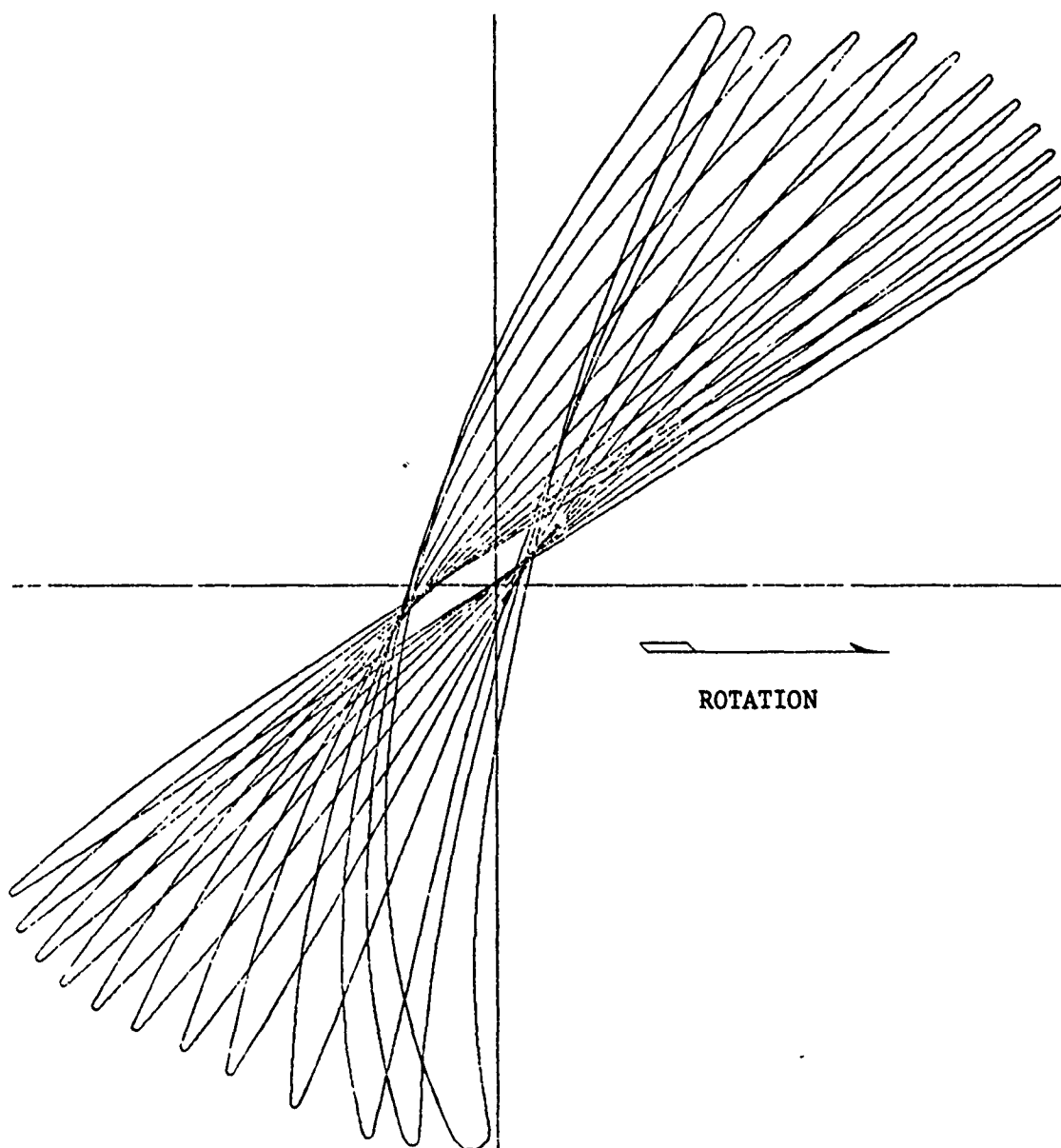


Figure 78. Stacked Phase V Rotor Streamsurface Sections

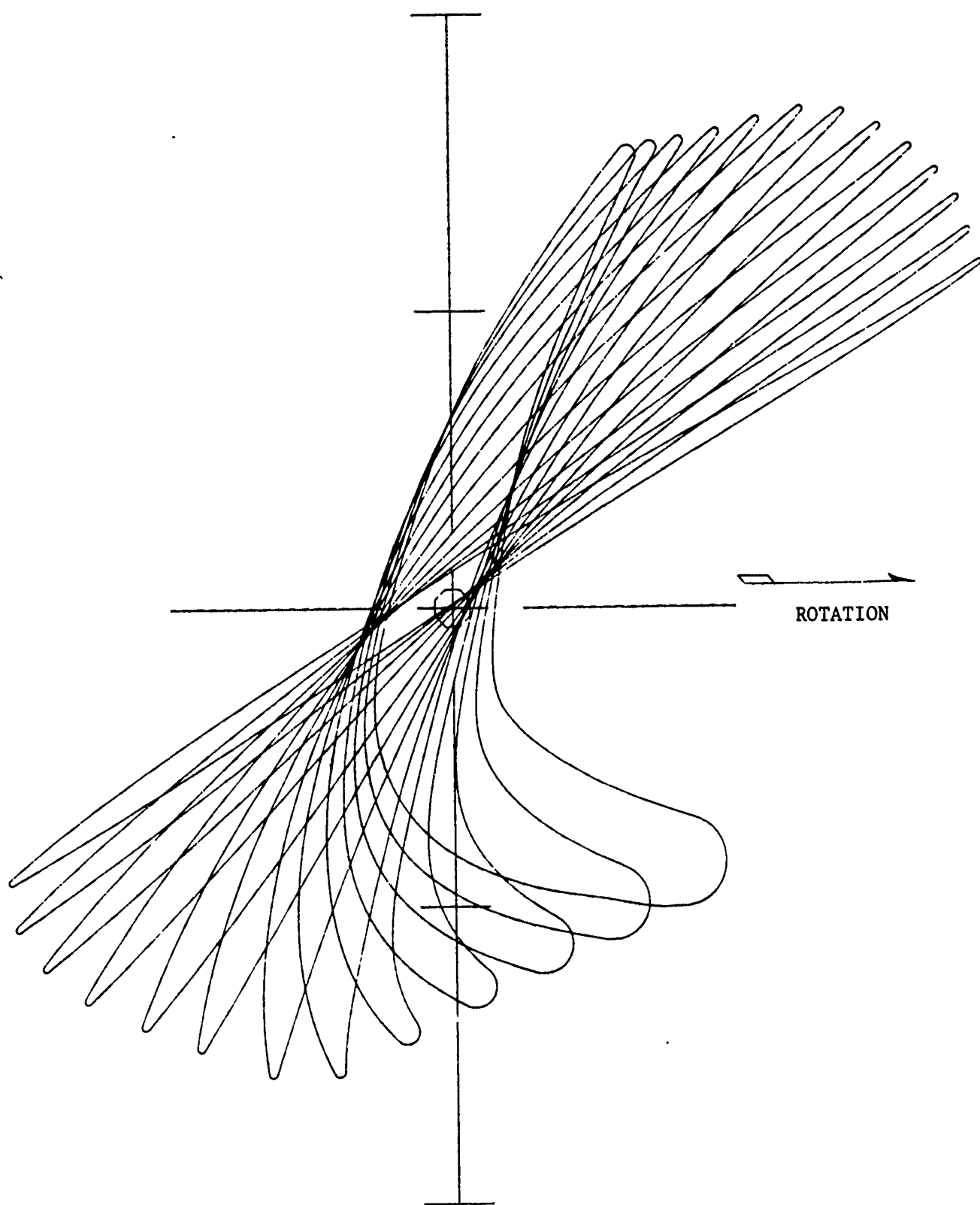


Figure 79 . Stacked Phase V Rotor Plane Sections

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY

MEANLINE INPUT DATA - STREAMLINE 1

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.12850	8.50000	0.21035	-55.160	0.01882	0.	-1.12850	-55.160	0.01882
2	-1.07760	8.50000	0.20163	-55.923	0.02265	0.	-1.07760	-55.923	0.02265
3	-0.97580	8.50000	0.18344	-57.311	0.03051	0.	-0.97580	-57.311	0.03051
4	-0.87410	8.50000	0.16435	-58.457	0.03854	0.	-0.87410	-58.457	0.03854
5	-0.77230	8.50000	0.14447	-59.373	0.04658	0.	-0.77230	-59.373	0.04658
6	-0.66030	8.50000	0.12184	-60.185	0.05530	0.	-0.66030	-60.185	0.05530
7	-0.53820	8.50000	0.09646	-60.691	0.06443	0.	-0.53820	-60.691	0.06443
8	-0.41610	8.50000	0.07090	-60.518	0.07279	0.	-0.41610	-60.518	0.07279
9	-0.29390	8.50000	0.04578	-59.899	0.08006	0.	-0.29390	-59.899	0.08006
10	-0.17180	8.50000	0.02134	-59.226	0.08608	0.	-0.17180	-59.226	0.08608
11	-0.04970	8.50000	-0.00255	-58.760	0.09078	0.	-0.04970	-58.760	0.09078
12	0.07240	8.50000	-0.02612	-58.547	0.09408	0.	0.07240	-58.547	0.09408
13	0.19460	8.50000	-0.04955	-58.416	0.09587	0.	0.19460	-58.416	0.09587
14	0.31670	8.50000	-0.07283	-58.194	0.09601	0.	0.31670	-58.194	0.09601
15	0.43880	8.50000	-0.09582	-57.757	0.09333	0.	0.43880	-57.757	0.09333
16	0.56100	8.50000	-0.11833	-57.092	0.08547	0.	0.56100	-57.092	0.08547
17	0.68310	8.50000	-0.14015	-56.106	0.07035	0.	0.68310	-56.106	0.07035
18	0.80520	8.50000	-0.16099	-54.635	0.04644	0.	0.80520	-54.635	0.04644
19	0.90700	8.50000	-0.17740	-53.100	0.01923	0.	0.90700	-53.100	0.01923

MEANLINE INPUT DATA - STREAMLINE 3

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.20460	8.13970	0.21627	-53.773	0.01945	0.752	-1.20464	-53.770	0.01945
2	-1.14910	8.14050	0.20684	-54.485	0.02362	0.731	-1.14914	-54.483	0.02362
3	-1.03810	8.14190	0.18726	-55.791	0.03213	0.657	-1.03813	-55.789	0.03213
4	-0.92710	8.14310	0.16677	-56.879	0.04078	0.484	-0.92712	-56.878	0.04078
5	-0.81610	8.14380	0.14553	-57.717	0.04942	0.241	-0.81612	-57.717	0.04942
6	-0.69410	8.14410	0.12148	-58.342	0.05870	0.027	-0.69412	-58.342	0.05870
7	-0.56090	8.14380	0.09479	-58.573	0.06827	-0.122	-0.56092	-58.573	0.06827
8	-0.42770	8.14340	0.06817	-58.196	0.07690	-0.283	-0.42772	-58.196	0.07690
9	-0.29450	8.14270	0.04217	-57.394	0.08431	-0.465	-0.29452	-57.393	0.08431
10	-0.16130	8.14120	0.01704	-56.485	0.09032	-0.610	-0.16131	-56.484	0.09032
11	-0.02810	8.13970	-0.00731	-55.764	0.09488	-0.588	-0.02810	-55.763	0.09488
12	0.10510	8.13850	-0.03114	-55.337	0.09791	-0.409	0.10510	-55.336	0.09791
13	0.23830	8.13780	-0.05470	-55.083	0.09935	-0.211	0.23831	-55.083	0.09935
14	0.37150	8.13750	-0.07804	-54.814	0.09897	-0.055	0.37151	-54.814	0.09897
15	0.50470	8.13760	-0.10108	-54.373	0.09539	0.015	0.50471	-54.373	0.09539
16	0.63790	8.13760	-0.12366	-53.734	0.08657	-0.091	0.63791	-53.734	0.08657
17	0.77110	8.13720	-0.14561	-52.744	0.07076	-0.265	0.77111	-52.743	0.07076
18	0.90430	8.13650	-0.16656	-51.124	0.04671	-0.238	0.90431	-51.124	0.04671
19	1.01530	8.13580	-0.18298	-49.372	0.01997	-0.092	1.01531	-49.372	0.01997

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY

MEANLINE INPUT DATA - STREAMLINE 4

PT	Z	R	THEIA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.28430	7.76190	0.22309	-52.490	0.02005	1.729	-1.28457	-52.477	0.02006
2	-1.22460	7.76370	0.21294	-53.212	0.02489	1.717	-1.22485	-53.200	0.02490
3	-1.10520	7.76730	0.19189	-54.469	0.03474	1.676	-1.10539	-54.457	0.03475
4	-0.98590	7.77080	0.17003	-55.318	0.04470	1.583	-0.98605	-55.308	0.04471
5	-0.86650	7.77390	0.14759	-55.785	0.05453	1.439	-0.86660	-55.777	0.05454
6	-0.73520	7.77710	0.12261	-56.082	0.06495	1.262	-0.73527	-56.075	0.06496
7	-0.59200	7.78000	0.09516	-56.159	0.07558	1.059	-0.59204	-56.154	0.07559
8	-0.44880	7.78240	0.06785	-55.784	0.08513	0.827	-0.44882	-55.781	0.08514
9	-0.30550	7.78410	0.04119	-54.913	0.09328	0.579	-0.30551	-54.912	0.09328
10	-0.16230	7.78520	0.01556	-53.704	0.09982	0.357	-0.16230	-53.704	0.09982
11	-0.01910	7.78590	-0.00900	-52.704	0.10167	0.248	-0.01910	-52.703	0.10167
12	0.12410	7.78640	-0.03287	-52.121	0.10780	0.284	0.12410	-52.121	0.10780
13	0.26740	7.78730	-0.05633	-51.695	0.10913	0.423	0.26740	-51.694	0.10913
14	0.41060	7.78850	-0.07946	-51.323	0.10839	0.556	0.41061	-51.321	0.10839
15	0.55380	7.79010	-0.10228	-50.926	0.10399	0.581	0.55382	-50.925	0.10399
16	0.69710	7.79140	-0.12468	-50.282	0.09389	0.497	0.69712	-50.281	0.09389
17	0.84030	7.79260	-0.14644	-49.247	0.07633	0.454	0.84033	-49.246	0.07633
18	0.98350	7.79390	-0.16725	-47.802	0.04997	0.691	0.98353	-47.800	0.04997
19	1.10290	7.79530	-0.18373	-46.370	0.02062	1.044	1.10295	-46.365	0.02062

MEANLINE INPUT DATA - STREAMLINE 5

PT	Z	R	THEIA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.35910	7.36230	0.22858	-51.272	0.02034	3.018	-1.36071	-51.233	0.02036
2	-1.29570	7.36580	0.21771	-51.976	0.02624	3.042	-1.29722	-51.937	0.02626
3	-1.16890	7.37260	0.19519	-53.173	0.03824	3.085	-1.17024	-53.133	0.03828
4	-1.04210	7.37950	0.17189	-53.886	0.05030	3.113	-1.04325	-53.846	0.05035
5	-0.91520	7.38630	0.14821	-54.119	0.06211	3.111	-0.91616	-54.079	0.06217
6	-0.77570	7.39390	0.12213	-54.061	0.07450	3.049	-0.77646	-54.022	0.07457
7	-0.62350	7.40200	0.09391	-53.678	0.08696	2.900	-0.62405	-53.643	0.08703
8	-0.47130	7.40940	0.06634	-52.840	0.09798	2.675	-0.47167	-52.810	0.09805
9	-0.31920	7.41610	0.03979	-51.702	0.10726	2.406	-0.31942	-51.678	0.10732
10	-0.16700	7.42220	0.01435	-50.555	0.11454	2.134	-0.16710	-50.535	0.11469
11	-0.01480	7.42750	-0.01014	-49.647	0.12005	1.907	-0.01481	-49.631	0.12009
12	0.13740	7.43220	-0.03396	-49.003	0.12340	1.761	0.13747	-48.990	0.12343
13	0.28960	7.43680	-0.05727	-48.414	0.12458	1.708	0.28974	-48.402	0.12461
14	0.44180	7.44140	-0.08009	-47.836	0.12316	1.697	0.44201	-47.823	0.12319
15	0.59400	7.44590	-0.10244	-47.253	0.11734	1.680	0.59427	-47.241	0.11737
16	0.74620	7.45020	-0.12429	-46.532	0.10507	1.680	0.74654	-46.520	0.10509
17	0.89840	7.45470	-0.14548	-45.548	0.08454	1.801	0.89881	-45.534	0.08456
18	1.05050	7.46010	-0.16583	-44.224	0.05427	2.186	1.05100	-44.203	0.05429
19	1.17740	7.46490	-0.18201	-42.925	0.02086	2.641	1.17801	-42.896	0.02087

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY

MEANLINE INPUT DATA - STREAMLINE 6

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.42790	6.93610	0.23274	-50.082	0.02047	4.607	-1.43281	-49.991	0.02051
2	-1.36110	6.94160	0.22111	-50.676	0.02812	4.676	-1.36579	-50.583	0.02818
3	-1.22750	6.95270	0.19719	-51.658	0.04359	4.815	-1.23173	-51.559	0.04368
4	-1.09390	6.96410	0.17267	-52.130	0.05902	4.955	-1.09764	-52.026	0.05916
5	-0.96030	6.97580	0.14801	-52.084	0.07400	5.071	-0.96352	-51.975	0.07418
6	-0.81340	6.98900	0.12115	-51.709	0.08956	5.113	-0.81604	-51.598	0.08978
7	-0.65310	7.00340	0.09246	-50.992	0.10501	5.015	-0.65511	-50.884	0.10525
8	-0.49280	7.01720	0.06477	-49.843	0.11850	4.764	-0.49422	-49.745	0.11874
9	-0.33240	7.03010	0.03834	-48.518	0.12970	4.465	-0.33330	-48.431	0.12992
10	-0.17210	7.04220	0.01311	-47.360	0.13847	4.215	-0.17254	-47.282	0.13867
11	-0.01180	7.05370	-0.01117	-46.399	0.14469	3.981	-0.01183	-46.330	0.14487
12	0.14850	7.06460	-0.03467	-45.558	0.14823	3.741	0.14884	-45.497	0.14839
13	0.30880	7.07470	-0.05746	-44.723	0.14894	3.514	0.30946	-44.669	0.14908
14	0.46910	7.08420	-0.07957	-43.919	0.14604	3.370	0.47005	-43.869	0.14616
15	0.62940	7.09350	-0.10106	-43.166	0.13755	3.363	0.63062	-43.117	0.13766
16	0.78980	7.10290	-0.12194	-42.305	0.12155	3.458	0.79130	-42.253	0.12165
17	0.95010	7.11290	-0.14211	-41.271	0.09629	3.683	0.95191	-41.212	0.09638
18	1.11040	7.12390	-0.16148	-40.131	0.06025	4.117	1.11258	-40.058	0.06031
19	1.24400	7.13360	-0.17701	-39.130	0.02102	4.580	1.24657	-39.040	0.02105

MEANLINE INPUT DATA - STREAMLINE 7

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.49330	6.47520	0.23554	-48.981	0.02011	6.632	-1.50438	-48.790	0.02019
2	-1.42340	6.48360	0.22305	-49.385	0.03020	6.751	-1.43400	-49.188	0.03032
3	-1.28350	6.50050	0.19762	-50.018	0.05048	6.980	-1.29309	-49.808	0.05070
4	-1.14370	6.51780	0.17189	-50.175	0.07053	7.178	-1.15221	-49.953	0.07086
5	-1.00390	6.53560	0.14632	-49.845	0.08984	7.313	-1.01128	-49.614	0.09027
6	-0.85010	6.55550	0.11876	-49.212	0.10972	7.337	-0.85621	-48.979	0.11024
7	-0.68220	6.57720	0.08962	-48.195	0.12930	7.215	-0.68695	-47.969	0.12987
8	-0.51440	6.59810	0.06190	-46.543	0.14620	6.995	-0.51785	-46.329	0.14677
9	-0.34660	6.61820	0.03597	-44.652	0.16000	6.746	-0.34883	-44.453	0.16055
10	-0.17880	6.63780	0.01165	-43.117	0.17060	6.502	-0.17991	-42.933	0.17111
11	-0.01100	6.65660	-0.01150	-41.975	0.17891	6.218	-0.01106	-41.807	0.17838
12	0.15680	6.67430	-0.03379	-41.090	0.18179	5.921	0.15768	-40.938	0.18221
13	0.32460	6.69130	-0.05537	-40.272	0.18200	5.704	0.32634	-40.132	0.18238
14	0.49240	6.70780	-0.07629	-39.490	0.17739	5.595	0.49496	-39.356	0.17773
15	0.66020	6.72420	-0.09662	-38.753	0.16579	5.599	0.66356	-38.619	0.16610
16	0.82800	6.74060	-0.11635	-37.986	0.14517	5.731	0.83218	-37.847	0.14539
17	0.99580	6.75770	-0.13547	-37.073	0.11342	6.013	1.00086	-36.921	0.11365
18	1.16360	6.77620	-0.15382	-35.890	0.06894	6.454	1.16966	-35.717	0.06909
19	1.30340	6.79230	-0.16843	-34.746	0.02110	6.893	1.31041	-34.551	0.02115

MERIDIONAL AIRFOIL GEOMETRY

MEANLINE INPUT DATA - STREAMLINE 8

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.55280	5.96820	0.23716	-48.019	0.01913	9.197	-1.57429	-47.650	0.01927
2	-1.48010	5.98040	0.22357	-48.280	0.03203	9.349	-1.50063	-47.899	0.03227
3	-1.33470	6.00480	0.19616	-48.622	0.05783	9.618	-1.35321	-48.220	0.05829
4	-1.18930	6.02960	0.16876	-48.451	0.08314	9.787	-1.20570	-48.034	0.08382
5	-1.04390	6.05480	0.14193	-47.679	0.10728	9.839	-1.05814	-47.257	0.10815
6	-0.88390	6.08260	0.11363	-46.319	0.13181	9.799	-0.89575	-45.898	0.13282
7	-0.70950	6.11270	0.08461	-44.390	0.15551	9.672	-0.71880	-43.980	0.15660
8	-0.53500	6.14210	0.05778	-42.162	0.17558	9.475	-0.54184	-41.771	0.17666
9	-0.36050	6.17090	0.03307	-40.058	0.19176	9.244	-0.36438	-39.690	0.19279
10	-0.18600	6.19900	0.01005	-38.463	0.20394	8.999	-0.18824	-38.118	0.20491
11	0.01150	6.22620	-0.01176	-37.212	0.21198	8.728	-0.01163	-36.891	0.21288
12	0.16300	6.25250	-0.03257	-36.135	0.21566	8.464	0.16485	-35.836	0.21648
13	0.33750	6.27810	-0.05255	-35.172	0.21460	8.284	0.34122	-34.890	0.21534
14	0.51200	6.30330	-0.07177	-34.267	0.20730	8.206	0.51754	-33.993	0.20797
15	0.68640	6.32840	-0.09028	-33.384	0.19171	8.243	0.69375	-33.111	0.19231
16	0.86090	6.35380	-0.10812	-32.540	0.16586	8.454	0.87011	-32.256	0.16638
17	1.03540	6.38010	-0.12531	-31.636	0.12787	8.821	1.04661	-31.332	0.12829
18	1.20990	6.40810	-0.14176	-30.477	0.07599	9.252	1.22330	-30.150	0.07624
19	1.35530	6.43220	-0.15480	-29.352	0.02109	9.627	1.37070	-29.006	0.02116

MEANLINE INPUT DATA - STREAMLINE 9

P.	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.59080	5.39620	0.23550	-46.729	0.01859	12.310	-1.62947	-46.064	0.01882
2	-1.51580	5.41310	0.22073	-46.826	0.03419	12.498	-1.55268	-46.140	0.03462
3	-1.36580	5.44710	0.19125	-46.843	0.06523	12.811	-1.39894	-46.122	0.06610
4	-1.21580	5.48140	0.16217	-46.330	0.09548	12.932	-1.24506	-45.594	0.09676
5	-1.06570	5.51590	0.13413	-45.113	0.12417	12.865	-1.09107	-44.385	0.12574
6	-0.90070	5.55340	0.10521	-43.008	0.15304	12.741	-0.92186	-42.296	0.15480
7	-0.72070	5.59390	0.07650	-40.224	0.18056	12.616	-0.73736	-39.535	0.18238
8	-0.54070	5.63400	0.05056	-37.825	0.20363	12.443	-0.55297	-37.167	0.20543
9	-0.36070	5.67340	0.02670	-35.900	0.22211	12.214	-0.36872	-35.279	0.22384
10	-0.18070	5.71190	0.00454	-34.161	0.23577	11.962	-0.18464	-33.578	0.23738
11	0.00070	5.74960	-0.01616	-32.649	0.24431	11.750	-0.00071	-32.100	0.24580
12	0.17940	5.78680	-0.03566	-31.350	0.24743	11.609	0.18319	-30.826	0.24880
13	0.35940	5.82360	-0.05409	-30.114	0.24457	11.532	0.36692	-29.610	0.24581
14	0.53940	5.86020	-0.07152	-28.866	0.23412	11.536	0.55062	-28.374	0.23522
15	0.71940	5.89700	-0.08796	-27.585	0.21429	11.658	0.73437	-27.098	0.21523
16	0.89940	5.93440	-0.10343	-26.310	0.18336	11.941	0.91824	-25.815	0.18414
17	1.07940	5.97300	-0.11798	-25.073	0.13966	12.330	1.10236	-24.564	0.14024
18	1.25950	6.01320	-0.13165	-23.884	0.08157	12.679	1.28684	-23.364	0.08189
19	1.40950	6.04750	-0.14241	-22.903	0.02103	12.932	1.44066	-22.380	0.02111

PHASE V ROTOR

NR 20

MERIDIONAL AIRFOIL GEOMETRY

MEANLINE INPUT DATA - STREAMLINE 10

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.56570	4.73500	0.22872	-45.466	0.02076	16.214	-1.63192	-44.303	0.02118
2	-1.48960	4.75780	0.21250	-45.198	0.03882	16.396	-1.55263	-44.009	0.03962
3	-1.33730	4.80340	0.18078	-44.519	0.07448	16.688	-1.39374	-43.287	0.07604
4	-1.18510	4.84920	0.15030	-43.423	0.10893	16.770	-1.23480	-42.182	0.11114
5	-1.03290	4.89490	0.12152	-41.780	0.14142	16.659	-1.07588	-40.562	0.14407
6	-0.86540	4.94480	0.09231	-39.384	0.17400	16.505	-0.90111	-38.206	0.17690
7	-0.68270	4.99870	0.06370	-36.378	0.20502	16.379	-0.71063	-35.252	0.20795
8	-0.50010	5.05220	0.03830	-33.565	0.23085	16.238	-0.52037	-32.500	0.23366
9	-0.31740	5.10520	0.01554	-31.112	0.25146	16.084	-0.33015	-30.109	0.25377
10	-0.13470	5.15750	-0.00501	-28.911	0.26567	15.954	-0.14007	-27.969	0.26805
11	0.04790	5.20950	-0.02365	-26.824	0.27400	15.889	0.04980	-25.935	0.27612
12	0.23060	5.26150	-0.04052	-24.793	0.27932	15.905	0.23976	-23.953	0.27764
13	0.41330	5.31360	-0.05577	-22.856	0.27032	15.987	0.42977	-22.058	0.27188
14	0.59600	5.36610	-0.06952	-20.919	0.25620	16.125	0.61988	-20.164	0.25747
15	0.77860	5.41920	-0.08181	-18.945	0.23204	16.331	0.81005	-18.232	0.23301
16	0.96130	5.47320	-0.09273	-17.198	0.19645	16.670	1.00059	-16.516	0.19716
17	1.14400	5.52840	-0.10255	-15.777	0.14801	17.041	1.19150	-15.116	0.14848
18	1.32670	5.58500	-0.11145	-14.541	0.08524	17.217	1.38270	-13.915	0.08548
19	1.47890	5.63280	-0.11825	-13.563	0.02101	17.249	1.54205	-12.974	0.02106

MEANLINE INPUT DATA - STREAMLINE 11

PT	Z	R	THETA	B*	T(Z)	PHI	X	B*M	T(M)
1	-1.50890	3.90510	0.22115	-43.343	0.02534	21.674	-1.62430	-41.252	0.02620
2	-1.43360	3.93570	0.20314	-42.960	0.04366	21.846	-1.54322	-40.838	0.04514
3	-1.28290	3.99710	0.16833	-41.965	0.07990	22.116	-1.38069	-39.799	0.08256
4	-1.13230	4.05830	0.13557	-40.324	0.11504	22.169	-1.21808	-38.169	0.11863
5	-0.98160	4.11940	0.10552	-37.985	0.14837	22.021	-1.05542	-35.900	0.15249
6	-0.81590	4.18620	0.07593	-35.093	0.18217	21.815	-0.87681	-33.117	0.18648
7	-0.63520	4.25830	0.04758	-31.890	0.21496	21.625	-0.68231	-30.045	0.21915
8	-0.45440	4.32950	0.02300	-28.638	0.24304	21.442	-0.48794	-26.943	0.24686
9	-0.27370	4.40010	0.00185	-25.500	0.26595	21.335	-0.29389	-23.955	0.26927
10	-0.09290	4.47070	-0.01635	-22.646	0.28329	21.371	-0.09978	-21.232	0.28612
11	0.08790	4.54160	-0.03200	-19.995	0.29474	21.524	0.09446	-18.701	0.29709
12	0.26860	4.61320	-0.04539	-17.457	0.29993	21.782	0.28887	-16.278	0.30181
13	0.44940	4.68600	-0.05670	-14.987	0.29824	22.152	0.48381	-13.926	0.29967
14	0.63020	4.76030	-0.06610	-12.613	0.28759	22.620	0.67933	-11.670	0.28861
15	0.81090	4.83660	-0.07374	-10.299	0.26525	23.177	0.87548	-9.484	0.26591
16	0.99170	4.91530	-0.07967	-7.810	0.22843	23.835	1.07264	-7.151	0.22878
17	1.17250	4.99620	-0.08380	-5.096	0.17436	24.326	1.27073	-4.646	0.17448
18	1.35320	5.07810	-0.08614	-2.378	0.10036	24.209	1.46902	-2.123	0.10037
19	1.50390	5.14680	-0.08674	0.010	0.02158	23.794	1.63440	0.009	0.02158

PHASE V ROTOR

NR 20

MERIDIONAL AIRFOIL GEOMETRY

MEANLINE INPUT DATA - STREAMLINE 12

PT	Z	R	THETA	R*	T(Z)	PHI	X	B*M	T(M)
1	-1.48900	3.36120	0.22123	-40.649	0.03331	25.852	-1.64855	-37.692	0.03474
2	-1.41530	3.39770	0.20271	-40.009	0.05419	25.907	-1.56664	-37.053	0.05646
3	-1.26790	3.47030	0.16754	-38.587	0.09544	25.944	-1.40272	-35.660	0.09920
4	-1.12040	3.54170	0.13495	-36.893	0.13530	25.764	-1.23879	-34.059	0.14016
5	-0.97300	3.61190	0.10509	-34.885	0.17293	25.422	-1.07535	-32.199	0.17839
6	-0.81080	3.68840	0.07550	-32.367	0.21075	25.151	-0.89598	-29.844	0.21643
7	-0.63390	3.77140	0.04712	-29.331	0.24670	25.068	-0.70064	-26.975	0.25219
8	-0.45690	3.85390	0.02271	-26.118	0.27617	25.065	-0.50525	-23.947	0.28110
9	-0.28000	3.93660	0.00198	-22.942	0.29830	25.167	-0.30990	-20.961	0.30248
10	-0.10310	4.02020	-0.01550	-20.019	0.31227	25.428	-0.11425	-18.214	0.31570
11	0.07390	4.10490	-0.03025	-17.416	0.31731	25.786	0.08202	-15.773	0.32003
12	0.25080	4.19110	-0.04265	-15.019	0.31285	26.249	0.27884	-13.531	0.31493
13	0.42770	4.27930	-0.05292	-12.558	0.29910	26.887	0.47661	-11.237	0.30056
14	0.60470	4.37030	-0.06106	-9.867	0.27631	27.596	0.67569	-8.763	0.27718
15	0.78160	4.46430	-0.06696	-6.776	0.24463	28.286	0.87593	-5.974	0.24501
16	0.95850	4.56140	-0.07035	-2.969	0.20418	29.062	1.07755	-2.596	0.20424
17	1.13550	4.66060	-0.07086	1.555	0.15503	29.585	1.28068	1.352	0.15504
18	1.31240	4.76080	-0.06826	6.418	0.09742	29.176	1.48384	5.609	0.09756
19	1.45980	4.84460	-0.06368	10.578	0.04307	28.329	1.65201	9.335	0.04323

MEANLINE INPUT DATA - STREAMLINE 13

PT	Z	R	THETA	R*	T(Z)	PHI	X	B*M	T(M)
1	-1.46930	2.65330	0.23827	-36.435	0.05041	31.199	-1.68831	-32.270	0.05298
2	-1.39860	2.69470	0.21888	-36.023	0.06912	30.603	-1.60592	-32.041	0.07244
3	-1.25710	2.77680	0.18190	-35.063	0.10651	29.513	-1.44246	-31.416	0.11105
4	-1.11560	2.85610	0.14740	-33.840	0.14304	28.724	-1.28053	-30.453	0.14846
5	-0.97410	2.93290	0.11555	-32.243	0.17791	28.302	-1.11954	-29.047	0.18389
6	-0.81840	3.01620	0.08393	-29.905	0.21365	28.181	-0.94285	-26.883	0.21983
7	-0.64860	3.10760	0.05398	-26.732	0.24875	28.431	-0.75005	-23.889	0.25466
8	-0.47880	3.20060	0.02881	-23.343	0.27877	29.100	-0.55641	-20.660	0.28409
9	-0.30900	3.29700	0.00793	-20.285	0.30288	30.104	-0.36116	-17.732	0.30757
10	-0.13920	3.39790	-0.00959	-17.896	0.32018	31.281	-0.16370	-15.428	0.32433
11	0.03060	3.50340	-0.02448	-15.744	0.32992	32.389	0.03620	-13.391	0.33346
12	0.20040	3.61310	-0.03689	-13.313	0.33124	33.335	0.23838	-11.183	0.33392
13	0.37020	3.72660	-0.04659	-10.180	0.32362	34.186	0.44264	-8.449	0.32523
14	0.54000	3.84380	-0.05309	-6.107	0.30700	35.003	0.64891	-5.009	0.30757
15	0.70980	3.96430	-0.05586	-0.977	0.28121	35.786	0.85723	-0.793	0.28122
16	0.87960	4.08330	-0.05437	5.209	0.24587	36.379	1.06740	4.197	0.24623
17	1.04940	4.21400	-0.04817	12.133	0.20102	36.561	1.27868	9.797	0.20261
18	1.21920	4.33860	-0.03702	19.205	0.14745	36.136	1.48062	15.713	0.15031
19	1.36070	4.44150	-0.02393	24.944	0.09632	35.488	1.66414	20.743	0.09934

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 1

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B-M	T (M)	PT	XS	YS	XP	YP									
1	0.	-1.12850	1.78792	-55.160	0.01882	1	-1.12850	1.78792	-1.12850	1.78792									
2	0.02500	-1.07761	1.71376	-55.923	0.02265	2	-1.13253	1.78140	-1.12078	1.78938									
3	0.05000	-1.02673	1.63749	-56.644	0.02655	3	-1.13103	1.77472	-1.11524	1.78568									
4	0.07500	-0.97584	1.55918	-57.311	0.03051	4	-1.08699	1.70741	-1.06823	1.72010									
5	0.10000	-0.92495	1.47893	-57.916	0.03451	5	-1.03781	1.63019	-1.01564	1.64478									
6	0.12500	-0.87406	1.39688	-58.458	0.03854	6	-0.98868	1.55094	-0.96300	1.56742									
7	0.15000	-0.82318	1.31317	-58.939	0.04257	7	-0.93957	1.46976	-0.91033	1.48810									
8	0.17500	-0.77229	1.22795	-59.373	0.04658	8	0.89049	1.38680	-0.85764	1.40696									
9	0.20000	-0.72140	1.14130	-59.769	0.05057	9	-0.84141	1.30219	-0.80494	1.32415									
10	0.23000	-0.66034	1.03560	-60.185	0.05530	10	-0.79233	1.21608	-0.75225	1.23981									
11	0.26000	-0.59927	0.92829	-60.510	0.05993	11	-0.74325	1.12857	-0.69955	1.15403									
12	0.29000	-0.53821	0.81985	-60.691	0.06443	12	-0.68432	1.02185	-0.63635	1.04935									
13	0.32000	-0.47714	0.71102	-60.684	0.06873	13	-0.62535	0.91354	-0.57319	0.94304									
14	0.35000	-0.41608	0.60260	-60.518	0.07279	14	-0.56630	0.80408	-0.51011	0.83562									
15	0.38000	-0.35501	0.49516	-60.239	0.07657	15	-0.50710	0.69420	-0.44718	0.72785									
16	0.41000	-0.29395	0.38908	-59.899	0.08006	16	-0.44776	0.58468	-0.38439	0.62051									
17	0.44000	-0.23288	0.28449	-59.549	0.08323	17	-0.38825	0.47616	-0.32177	0.51417									
18	0.47000	-0.17182	0.18129	-59.226	0.08608	18	-0.32858	0.36901	-0.25931	0.40916									
19	0.50000	-0.11075	0.07931	-58.959	0.08860	19	-0.26875	0.26340	-0.19701	0.30558									
20	0.53000	-0.04969	-0.02173	-58.760	0.09078	20	-0.20879	0.15927	-0.13484	0.20332									
21	0.56000	0.01138	-0.12213	-58.630	0.09261	21	-0.14871	0.05647	-0.07279	0.10216									
22	0.59000	0.07244	-0.22211	-58.547	0.09408	22	-0.08849	-0.04527	-0.01088	0.00181									
23	0.62000	0.13351	-0.32182	-58.482	0.09516	23	-0.02816	-0.14623	0.05092	-0.09802									
24	0.65000	0.19457	-0.42127	-58.416	0.09587	24	0.03232	-0.24666	0.11257	-0.19757									
25	0.68000	0.25564	-0.52043	-58.326	0.09619	25	0.09295	-0.34669	0.17407	-0.29694									
26	0.71000	0.31670	-0.61916	-58.194	0.09601	26	0.15374	-0.44638	0.23541	-0.39617									
27	0.74000	0.37777	-0.71728	-58.004	0.09516	27	0.21471	-0.54568	0.29657	-0.49517									
28	0.77000	0.43884	-0.81457	-57.757	0.09333	28	0.27591	-0.64446	0.35750	-0.59386									
29	0.80000	0.49990	-0.91084	-57.456	0.09020	29	0.33742	-0.74249	0.41812	-0.69207									
30	0.83000	0.56096	-1.00588	-57.092	0.08547	30	0.39937	-0.83947	0.47830	-0.78968									
31	0.86000	0.62203	-1.09948	-56.651	0.07890	31	0.46188	-0.93510	0.53792	-0.88658									
32	0.89000	0.68310	-1.19136	-56.106	0.07035	32	0.52509	-1.02910	0.59684	-0.98267									
33	0.92000	0.74416	-1.28115	-55.431	0.05966	33	0.58908	-1.12117	0.65498	-1.07780									
34	0.95000	0.80523	-1.36850	-54.635	0.04643	34	0.65390	-1.21097	0.71229	-1.17174									
35	0.97500	0.85611	-1.43924	-53.893	0.03335	35	0.71960	-1.29807	0.76872	-1.26422									
36	1.00000	0.90700	-1.50801	-53.100	0.01923	36	0.78629	-1.38194	0.82416	-1.35506									
						37	0.84264	-1.44907	0.86959	-1.42941									
						38	0.89290	-1.50659	0.90960	-1.49410									
						39	0.93894	-1.55095	0.91109	-1.50106									
						40	0.90700	-1.50801	0.90700	-1.50801									

CHORD 3 87382 CAMBER 2.061 STAGGER -58.301

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 3

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B-M	T(M)	PT	XS	YS	XP	YP									
1	0.	-1.20464	1.76096	-53.770	0.01945	1	-1.20464	1.76096	-1.20464	1.76096									
2	0.02500	-1.14914	1.68421	-54.483	0.02362	2	-1.20864	1.75411	-1.19671	1.76266									
3	0.05000	-1.09364	1.60546	-55.159	0.02785	3	-1.20693	1.74726	-1.19088	1.75898									
4	0.07500	-1.03814	1.52477	-55.789	0.03213	4	-1.15875	1.67735	-1.13953	1.69107									
5	0.10000	-0.98265	1.44224	-56.363	0.03645	5	-1.10507	1.59751	-1.08221	1.61342									
6	0.12500	-0.92715	1.35799	-56.877	0.04078	6	-1.05143	1.51574	-1.02486	1.53381									
7	0.15000	-0.87165	1.27217	-57.328	0.04511	7	-0.99782	1.43215	-0.96747	1.45233									
8	0.17500	-0.81615	1.18496	-57.716	0.04942	8	-0.94422	1.34685	-0.91007	1.36913									
9	0.20000	-0.76065	1.09654	-58.042	0.05368	9	-0.89063	1.26000	-0.85266	1.28435									
10	0.23000	-0.69405	0.98913	-58.342	0.05870	10	-0.83704	1.17177	-0.79526	1.19816									
11	0.26000	-0.62745	0.88068	-58.528	0.06359	11	-0.78342	1.08234	-0.73788	1.11075									
12	0.29000	-0.56086	0.77173	-58.573	0.06827	12	-0.71904	0.97372	-0.66907	1.00453									
13	0.32000	-0.49426	0.66293	-58.455	0.07273	13	-0.65457	0.86408	-0.60034	0.89728									
14	0.35000	-0.42766	0.55495	-58.195	0.07690	14	-0.58998	0.75393	-0.53173	0.78952									
15	0.38000	-0.36106	0.44829	-57.828	0.08078	15	-0.52525	0.64391	-0.46327	0.68195									
16	0.41000	-0.29446	0.34328	-57.393	0.08431	16	-0.46034	0.53468	-0.39498	0.57521									
17	0.44000	-0.22786	0.24009	-56.931	0.08750	17	-0.39525	0.42678	-0.32687	0.46979									
18	0.47000	-0.16126	0.13869	-56.484	0.09033	18	-0.32997	0.32057	-0.25895	0.36600									
19	0.50000	-0.09467	0.03890	-56.088	0.09279	19	-0.26453	0.21622	-0.19120	0.26396									
20	0.53000	-0.02807	-0.05954	-55.762	0.09488	20	-0.19892	0.11375	-0.12361	0.16362									
21	0.56000	0.03853	-0.15692	-55.517	0.09659	21	-0.13317	0.01301	-0.05616	0.06478									
22	0.59000	0.10513	-0.25354	-55.336	0.09791	22	-0.06729	-0.08623	0.01115	-0.03285									
23	0.62000	0.17173	-0.34960	-55.199	0.09823	23	-0.00128	-0.18427	0.07834	-0.12958									
24	0.65000	0.23833	-0.44521	-55.083	0.09935	24	0.06486	-0.28139	0.14540	-0.22570									
25	0.68000	0.30493	-0.54040	-54.963	0.09945	25	0.13115	-0.37780	0.21230	-0.32139									
26	0.71000	0.37152	-0.63513	-54.814	0.09897	26	0.19759	-0.47364	0.27906	-0.41677									
27	0.74000	0.43812	-0.72927	-54.618	0.09770	27	0.26421	-0.56895	0.34564	-0.51186									
28	0.77000	0.50472	-0.82263	-54.373	0.09539	28	0.33108	-0.66365	0.41197	-0.60662									
29	0.80000	0.57132	-0.91508	-54.083	0.09176	29	0.39829	-0.75755	0.47795	-0.70098									
30	0.83000	0.63792	-1.00646	-53.734	0.08657	30	0.46595	-0.85041	0.54349	-0.79485									
31	0.86000	0.70452	-1.09655	-53.303	0.07960	31	0.53416	-0.94200	0.60848	-0.88817									
32	0.89000	0.77111	-1.18505	-52.743	0.07076	32	0.60302	-1.03207	0.67282	-0.98086									
33	0.92000	0.83771	-1.27151	-52.013	0.05991	33	0.67260	-1.12034	0.73643	-1.07277									
34	0.95000	0.90431	-1.35548	-51.124	0.04671	34	0.74295	-1.20647	0.79927	-1.16363									
35	0.97500	0.95981	-1.42331	-50.281	0.03382	35	0.81410	-1.28995	0.86132	-1.25307									
36	1.00000	1.01531	-1.48906	-49.372	0.01997	36	0.88613	-1.37014	0.92249	-1.34083									
						37	0.94680	-1.43412	0.97282	-1.41251									
						38	1.00062	-1.48852	1.01705	-1.47448									
						39	1.00708	-1.49161	1.01907	-1.48161									
						40	1.01531	-1.48906	1.01531	-1.48906									

CHORD 3.93584 CAMBER 4.398 STAGGER -55.665

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 4

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B+M	T(M)	PT	XS	YS	XP	YP									
1	0	-1.28457	1.73494	-52.477	0.0206	1	-1.28457	1.73494	-1.28457	1.73494									
2	0.02500	-1.22489	1.65619	-53.200	0.0248	2	-1.28855	1.72778	-1.27643	1.73689									
3	0.05000	-1.16520	1.57540	-53.869	0.02979	3	-1.28663	1.72075	-1.27032	1.73324									
4	0.07500	-1.10551	1.49273	-54.456	0.03474	4	-1.23485	1.64873	-1.21492	1.66364									
5	0.10000	-1.04582	1.40841	-54.936	0.03972	5	-1.17723	1.56662	-1.15317	1.58418									
6	0.12500	-0.98613	1.32275	-55.308	0.04470	6	-1.11964	1.48263	-1.09138	1.50283									
7	0.15000	-0.92645	1.23606	-55.577	0.04965	7	-1.06208	1.39700	-1.02955	1.41982									
8	0.17500	-0.86676	1.14863	-55.776	0.05453	8	-1.00451	1.31003	-0.96775	1.33547									
9	0.20000	-0.80707	1.06061	-55.934	0.05933	9	-0.94692	1.22203	-0.90597	1.25010									
10	0.23000	-0.73548	0.95438	-56.075	0.06495	10	-0.88930	1.13329	-0.84421	1.16396									
11	0.26000	-0.66382	0.84770	-56.159	0.07038	11	-0.83164	1.04399	-0.78250	1.07722									
12	0.29000	-0.59219	0.74085	-56.154	0.07558	12	-0.76239	0.93626	-0.70850	0.97251									
13	0.32000	-0.52057	0.63425	-56.031	0.08051	13	-0.69304	0.82810	-0.63459	0.86730									
14	0.35000	-0.44894	0.52839	-55.781	0.08513	14	-0.62358	0.71980	-0.56081	0.76189									
15	0.38000	-0.37732	0.42376	-55.407	0.08939	15	-0.55395	0.61175	-0.48718	0.65674									
16	0.41000	-0.30569	0.32082	-54.913	0.09327	16	-0.48414	0.50445	-0.41374	0.55233									
17	0.44000	-0.23406	0.21995	-54.320	0.09675	17	-0.41411	0.39839	-0.34052	0.44914									
18	0.47000	-0.16244	0.12133	-53.705	0.09982	18	-0.34385	0.29402	-0.26753	0.34763									
19	0.50000	-0.09081	0.02480	-53.153	0.10245	19	-0.27336	0.19173	-0.19477	0.24817									
20	0.53000	-0.01919	-0.06997	-52.704	0.10467	20	-0.20266	0.09178	-0.12221	0.15087									
21	0.56000	0.05244	-0.16341	-52.374	0.10646	21	-0.13181	-0.00592	-0.04982	0.05553									
22	0.59000	0.12406	-0.25590	-52.121	0.10780	22	-0.06082	-0.10168	0.02245	-0.03825									
23	0.62000	0.19569	-0.34760	-51.899	0.10869	23	0.01028	-0.19591	0.09460	-0.13092									
24	0.65000	0.26732	-0.43861	-51.694	0.10913	24	0.08152	-0.28899	0.16661	-0.22280									
25	0.68000	0.33894	-0.52897	-51.503	0.10910	25	0.15292	-0.38113	0.23846	-0.31407									
26	0.71000	0.41057	-0.61873	-51.321	0.10839	26	0.22450	-0.47243	0.31013	-0.40478									
27	0.74000	0.48219	-0.70792	-51.139	0.10678	27	0.29625	-0.56292	0.38163	-0.49501									
28	0.77000	0.55382	-0.79648	-50.925	0.10399	28	0.36826	-0.65260	0.45288	-0.58486									
29	0.80000	0.62544	-0.88427	-50.645	0.09378	29	0.44062	-0.74141	0.52376	-0.67442									
30	0.83000	0.69707	-0.97107	-50.281	0.08390	30	0.51345	-0.82925	0.59418	-0.76370									
31	0.86000	0.76870	-1.05661	-49.816	0.08611	31	0.58687	-0.91591	0.66402	-0.85264									
32	0.89000	0.84032	-1.14059	-49.246	0.07633	32	0.66096	-1.00108	0.73318	-0.94107									
33	0.92000	0.91195	-1.22275	-48.569	0.06443	33	0.73580	-1.08439	0.80159	-1.02883									
34	0.95000	0.98357	-1.30283	-47.800	0.04996	34	0.81141	-1.16551	0.86923	-1.11568									
35	0.97500	1.04326	-1.36787	-47.101	0.03582	35	0.88779	-1.24406	0.93610	-1.20143									
36	1.00000	1.10295	-1.43129	-46.365	0.02062	36	0.96507	-1.31961	1.00208	-1.28605									
						37	1.03014	-1.38006	1.05638	-1.35568									
						38	1.08773	-1.43158	1.10400	-1.41611									
						39	1.09460	-1.43438	1.10645	-1.42335									
						40	1.10295	-1.43129	1.10295	-1.43129									

CHORD 3.96551 CAMBER 6.112 STAGGER -52.982

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 5

MEANLINE DATA					SURFACE COORDINATES					
PT	PCT X	X	Y	B+M	T(M)	PT	X _S	Y _S	X _P	Y _P
1	0.	-1.36071	1.69040	-51.233	0.02036	1	-1.36071	1.69040	-1.36071	1.69040
2	0.02500	-1.29724	1.61036	-51.937	0.02626	2	-1.36460	1.68303	-1.35247	1.69257
3	0.05000	-1.23377	1.52834	-52.583	0.03224	3	-1.36252	1.67592	-1.34617	1.68901
4	0.07500	-1.17030	1.44452	-53.133	0.03827	4	-1.30758	1.60226	-1.28690	1.61845
5	0.10000	-1.10683	1.35919	-53.555	0.04432	5	-1.24657	1.51854	-1.22097	1.53813
6	0.12500	-1.04337	1.27276	-53.845	0.05034	6	-1.18561	1.43304	-1.15499	1.45600
7	0.15000	-0.97990	1.18560	-54.009	0.05629	7	-1.12466	1.34603	-1.08901	1.37236
8	0.17500	-0.91643	1.09809	-54.079	0.06215	8	-1.06369	1.25791	-1.02304	1.28761
9	0.20000	-0.85296	1.01045	-54.085	0.06787	9	-1.00267	1.16906	-0.95713	1.20214
10	0.23000	-0.77680	0.90539	-54.022	0.07454	10	-0.94159	1.07986	-0.89127	1.11632
11	0.26000	-0.70064	0.80072	-53.884	0.08093	11	-0.88045	0.99054	-0.82548	1.03036
12	0.29000	-0.62448	0.69676	-53.645	0.08700	12	-0.80696	0.88350	-0.74664	0.92729
13	0.32000	-0.54832	0.59393	-53.282	0.09271	13	-0.73333	0.77687	-0.66795	0.82457
14	0.35000	-0.47216	0.49265	-52.813	0.09802	14	-0.65951	0.67097	-0.58945	0.72254
15	0.38000	-0.39599	0.39324	-52.267	0.10289	15	-0.58547	0.56621	-0.51116	0.62164
16	0.41000	-0.31983	0.29584	-51.681	0.10730	16	-0.51120	0.46303	-0.43311	0.52228
17	0.44000	-0.24367	0.20048	-51.092	0.11123	17	-0.43668	0.36175	-0.35531	0.42472
18	0.47000	-0.16751	0.10706	-50.538	0.11467	18	-0.36192	0.26257	-0.27774	0.32910
19	0.50000	-0.09135	0.01536	-50.048	0.11762	19	-0.28695	0.16555	-0.20040	0.23541
20	0.53000	-0.01519	-0.07487	-49.633	0.12008	20	-0.21178	0.07062	-0.12324	0.14350
21	0.56000	0.06097	-0.16391	-49.292	0.12202	21	-0.13643	-0.02240	-0.04626	0.05313
22	0.59000	0.13714	-0.25196	-48.991	0.12343	22	-0.06093	-0.11376	0.03056	-0.03599
23	0.62000	0.21330	-0.33909	-48.696	0.12430	23	0.01473	-0.20370	0.10722	-0.12412
24	0.65000	0.28946	-0.42533	-48.403	0.12461	24	0.09057	-0.29245	0.18371	-0.21146
25	0.68000	0.36562	-0.51068	-48.111	0.12432	25	0.16661	-0.38011	0.25998	-0.29807
26	0.71000	0.44178	-0.59517	-47.824	0.12319	26	0.24286	-0.46669	0.33605	-0.38396
27	0.74000	0.51794	-0.67882	-47.540	0.12097	27	0.31935	-0.55218	0.41189	-0.46918
28	0.77000	0.59410	-0.76162	-47.241	0.11738	28	0.39613	-0.63652	0.48743	-0.55381
29	0.80000	0.67027	-0.84352	-46.907	0.11218	29	0.47332	-0.71965	0.56256	-0.63799
30	0.83000	0.74643	-0.92439	-46.521	0.10511	30	0.55101	-0.80146	0.63719	-0.72178
31	0.86000	0.82259	-1.00409	-46.068	0.09594	31	0.62931	-0.88184	0.71122	-0.80520
32	0.89000	0.89875	-1.08244	-45.535	0.08457	32	0.70829	-0.96055	0.78456	-0.88823
33	0.92000	0.97491	-1.15921	-44.909	0.07084	33	0.78804	-1.03737	0.85714	-0.97081
34	0.95000	1.05107	-1.23422	-44.203	0.05427	34	0.86857	-1.11206	0.92893	-1.05282
35	0.97500	1.11454	-1.29527	-43.564	0.03616	35	0.94991	-1.18430	0.99992	-1.13413
36	1.00000	1.17801	-1.35494	-42.896	0.02087	36	1.03215	-1.25367	1.06999	-1.21477
						37	1.10139	-1.30909	1.12769	-1.28144
						38	1.16257	-1.35627	1.17824	-1.33946
						39	1.16975	-1.35862	1.18109	-1.34665
						40	1.17801	-1.35494	1.17801	-1.35494

CHORD 3.96474 CAMBER 8.338 STAGGER -50 184

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 6

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B+M	T(M)	PT	XS	YS	XP	YP									
1	0.	-1.43281	1.62720	-49.991	0.02051	1	-1.43281	1.62720	-1.43281	1.62720									
2	0.02500	-1.36582	1.54654	-50.582	0.02817	2	-1.43659	1.61965	-1.42454	1.62959									
3	0.05000	-1.29884	1.46424	-51.120	0.03590	3	-1.43437	1.61252	-1.41808	1.62617									
4	0.07500	-1.23185	1.38049	-51.559	0.04367	4	-1.37670	1.53760	-1.35494	1.55549									
5	0.10000	-1.16487	1.29560	-51.863	0.05143	5	-1.31281	1.45298	-1.28486	1.47551									
6	0.12500	-1.09788	1.21000	-52.026	0.05913	6	-1.24895	1.36691	-1.21475	1.39406									
7	0.15000	-1.03090	1.12411	-52.051	0.06671	7	-1.18509	1.27972	-1.14464	1.31148									
8	0.17500	-0.96391	1.03831	-51.976	0.07414	8	-1.12119	1.19181	-1.07458	1.22819									
9	0.20000	-0.89693	0.95285	-51.836	0.08137	9	-1.05720	1.10360	-1.00460	1.14462									
10	0.23000	-0.81655	0.85099	-51.599	0.08973	10	-0.99312	1.01548	-0.93471	1.06115									
11	0.26000	-0.73617	0.75011	-51.292	0.09769	11	-0.92892	0.92771	-0.86494	0.97799									
12	0.29000	-0.65579	0.65049	-50.888	0.10519	12	-0.85171	0.82312	-0.78139	0.87885									
13	0.32000	-0.57541	0.55250	-50.365	0.11271	13	-0.77428	0.71956	-0.69805	0.78065									
14	0.35000	-0.49502	0.45649	-49.751	0.11868	14	-0.69660	0.61731	-0.61498	0.68367									
15	0.38000	-0.41464	0.36263	-49.092	0.12457	15	-0.61861	0.51672	-0.53220	0.58829									
16	0.41000	-0.33426	0.27093	-48.439	0.12986	16	-0.54031	0.41815	-0.44973	0.49483									
17	0.44000	-0.25388	0.18124	-47.836	0.13455	17	-0.46171	0.32184	-0.36757	0.40341									
18	0.47000	-0.17350	0.09334	-47.288	0.13863	18	-0.38285	0.22785	-0.28568	0.31400									
19	0.50000	-0.09312	0.00703	-46.790	0.14206	19	-0.30375	0.13608	-0.20401	0.22640									
20	0.53000	-0.01274	-0.07785	-46.335	0.14435	20	-0.22443	0.04632	-0.12257	0.14035									
21	0.56000	0.06764	-0.16144	-45.911	0.14695	21	-0.14489	-0.04160	-0.04135	0.05566									
22	0.59000	0.14803	-0.24383	-45.501	0.14838	22	-0.06513	-0.12786	0.03965	-0.02785									
23	0.62000	0.22841	-0.32504	-45.087	0.14911	23	0.01487	-0.21257	0.12042	-0.11032									
24	0.65000	0.30879	-0.40509	-44.672	0.14908	24	0.09511	-0.29583	0.20094	-0.19183									
25	0.68000	0.38917	-0.48399	-44.264	0.14819	25	0.17561	-0.37768	0.28120	-0.27240									
26	0.71000	0.46955	-0.56179	-43.872	0.14618	26	0.25638	-0.45809	0.36119	-0.35208									
27	0.74000	0.54993	-0.63856	-43.497	0.14275	27	0.33745	-0.53705	0.44089	-0.43092									
28	0.77000	0.63031	-0.71433	-43.118	0.13768	28	0.41890	-0.61448	0.52020	-0.50910									
29	0.80000	0.71069	-0.78907	-42.708	0.13075	29	0.50080	-0.69034	0.59906	-0.58678									
30	0.83000	0.79108	-0.86269	-42.254	0.12168	30	0.58326	-0.76458	0.67737	-0.66408									
31	0.86000	0.87146	-0.93508	-41.753	0.11026	31	0.66635	-0.83711	0.75503	-0.74103									
32	0.89000	0.95184	-1.00616	-41.212	0.09632	32	0.75017	-0.90772	0.83198	-0.81766									
33	0.92000	1.03222	-1.07587	-40.646	0.07993	33	0.83475	-0.97621	0.90817	-0.89396									
34	0.95000	1.11260	-1.14417	-40.058	0.06031	34	0.92008	-1.04242	0.98359	-0.96991									
35	0.97500	1.17958	-1.19999	-39.554	0.04134	35	1.00619	-1.10619	1.05825	-1.04555									
36	1.00000	1.24657	-1.25482	-39.040	0.02105	36	1.09319	-1.16725	1.13201	-1.12109									
						37	1.16642	-1.21593	1.19275	-1.18405									
						38	1.23103	-1.25736	1.24598	-1.23909									
						39	1.23848	-1.25915	1.24916	-1.24619									
						40	1.24657	-1.25482	1.24657	-1.25482									

CHORD 3.93511 CAMBER 10.951 STAGGER -47.087

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 7

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B+M	T(M)	PT	XS	YS	XP	YP									
1	0.	-1.50438	1.54463	-48.790	0.02019	1	-1.50438	1.54463	-1.50438	1.54463									
2	0.02500	-1.43401	1.46370	-49.188	0.03032	2	-1.50798	1.53706	-1.49629	1.54718									
3	0.05000	-1.36364	1.38168	-49.542	0.04049	3	-1.50569	1.53008	-1.48978	1.54400									
4	0.07500	-1.29327	1.29875	-49.808	0.05067	4	-1.44548	1.45379	-1.42253	1.47361									
5	0.10000	-1.22290	1.21522	-49.948	0.06080	5	-1.37904	1.36854	-1.34823	1.39482									
6	0.12500	-1.15253	1.13147	-49.954	0.07081	6	-1.31262	1.28240	-1.27391	1.31510									
7	0.15000	-1.08216	1.04790	-49.830	0.08063	7	-1.24617	1.19565	-1.19963	1.23478									
8	0.17500	-1.01179	0.96484	-49.616	0.09020	8	-1.17963	1.10869	-1.12542	1.15425									
9	0.20000	-0.94142	0.88248	-49.352	0.09947	9	-1.11297	1.02189	-1.05135	1.07390									
10	0.23000	-0.85698	0.78474	-48.983	0.11014	10	-1.04614	0.93561	-0.97744	0.99406									
11	0.26000	-0.77253	0.68838	-48.544	0.12025	11	-0.97916	0.85008	-0.90368	0.91488									
12	0.29000	-0.68809	0.59369	-47.978	0.12975	12	-0.89853	0.74860	-0.81542	0.82089									
13	0.32000	-0.60365	0.50115	-47.231	0.13857	13	-0.81760	0.64858	-0.72747	0.72819									
14	0.35000	-0.51920	0.41123	-46.344	0.14665	14	-0.73628	0.55026	-0.63990	0.63711									
15	0.38000	-0.43476	0.32418	-45.394	0.15395	15	-0.65451	0.45410	-0.55278	0.54819									
16	0.41000	-0.35031	0.23995	-44.468	0.16044	16	-0.57225	0.36061	-0.46615	0.46185									
17	0.44000	-0.26587	0.15826	-43.650	0.16614	17	-0.48956	0.27012	-0.37996	0.37823									
18	0.47000	-0.18143	0.07872	-42.945	0.17103	18	-0.40651	0.18270	-0.29412	0.29720									
19	0.50000	-0.09698	0.00097	-42.338	0.17510	19	-0.32321	0.09815	-0.20853	0.21837									
20	0.53000	-0.01254	-0.07525	-41.816	0.17833	20	-0.23969	0.01612	-0.12317	0.14132									
21	0.56000	0.07190	-0.15018	-41.361	0.18070	21	-0.15595	-0.06374	-0.03802	0.06569									
22	0.59000	0.15635	-0.22398	-40.945	0.18219	22	-0.07199	-0.14170	0.04691	-0.00879									
23	0.62000	0.24079	-0.29672	-40.538	0.18280	23	0.01220	-0.21799	0.13161	-0.08237									
24	0.65000	0.32524	-0.36843	-40.137	0.18239	24	0.09665	-0.29279	0.21605	-0.15517									
25	0.68000	0.40968	-0.43913	-39.743	0.18081	25	0.18139	-0.36618	0.30020	-0.22726									
26	0.71000	0.49412	-0.50887	-39.360	0.17777	26	0.26645	-0.43814	0.38402	-0.29871									
27	0.74000	0.57857	-0.57767	-38.989	0.17297	27	0.35188	-0.50864	0.46748	-0.36962									
28	0.77000	0.66301	-0.64558	-38.621	0.16615	28	0.43775	-0.57759	0.55049	-0.44014									
29	0.80000	0.74745	-0.71259	-38.245	0.15707	29	0.52415	-0.64439	0.63298	-0.51045									
30	0.83000	0.83190	-0.77868	-37.848	0.14544	30	0.61116	-0.71048	0.71486	-0.58067									
31	0.86000	0.91634	-0.84379	-37.414	0.13100	31	0.69884	-0.77427	0.79607	-0.65091									
32	0.89000	1.00078	-0.90783	-36.921	0.11366	32	0.78728	-0.83610	0.87652	-0.72126									
33	0.92000	1.08523	-0.97064	-36.353	0.09324	33	0.87654	-0.89582	0.95614	-0.79177									
34	0.95000	1.16967	-1.03209	-35.717	0.06909	34	0.96664	-0.95327	1.03492	-0.86239									
35	0.97500	1.24004	-1.08216	-35.146	0.04590	35	1.05759	-1.00819	1.11286	-0.93310									
36	1.00000	1.31041	-1.13116	-34.551	0.02115	36	1.14951	-1.06013	1.18984	-1.00404									
						37	1.22683	-1.10092	1.25325	-1.06340									
						38	1.29491	-1.13519	1.30868	-1.11525									
						39	1.30258	-1.13625	1.31242	-1.12224									
						40	1.31041	-1.13116	1.31041	-1.13116									

CHORD 3.88367 CAMBER 14.239 STAGGER -43.550

PHASE V ROTOR

NB 20

MFRICTIONAL AIRFOIL GEOMETRY - STREAMLINE 8

MEANLINE DATA						SURFACE COORDINATES					
PT	PCT X	X	Y	B+M	T(M)	PT	XS	YS	XP	YP	
1	0.	-1.57429	1.44220	-47.650	0.01927	1	-1.57429	1.44220	-1.57429	1.44220	
2	0.02500	-1.50067	1.36107	-47.899	0.03226	2	-1.57763	1.43486	-1.56661	1.44484	
3	0.05000	-1.42704	1.27928	-48.104	0.04528	3	-1.57536	1.42822	-1.56027	1.44196	
4	0.07500	-1.35342	1.19702	-48.219	0.05825	4	-1.51264	1.35026	-1.48870	1.37189	
5	0.10000	-1.27979	1.11461	-48.202	0.07111	5	-1.44390	1.26416	-1.41019	1.29440	
6	0.12500	-1.20617	1.03246	-48.035	0.08374	6	-1.37514	1.17761	-1.33170	1.21643	
7	0.15000	-1.13255	0.95102	-47.715	0.09607	7	-1.30630	1.09091	-1.25329	1.13830	
8	0.17500	-1.05892	0.87067	-47.262	0.10802	8	-1.23730	1.00446	-1.17504	1.06046	
9	0.20000	-0.98530	0.79175	-46.702	0.11952	9	-1.16808	0.91870	-1.09701	0.98334	
10	0.23000	-0.89695	0.69924	-45.910	0.13265	10	-1.09859	0.83402	-1.01925	0.90733	
11	0.26000	-0.80860	0.60944	-45.004	0.14497	11	-1.02879	0.75076	-0.94180	0.83273	
12	0.29000	-0.72025	0.52258	-43.998	0.15642	12	-0.94458	0.65309	-0.84931	0.74538	
13	0.32000	-0.63190	0.43886	-42.911	0.16693	13	-0.85985	0.55818	-0.75734	0.66069	
14	0.35000	-0.54355	0.35832	-41.792	0.17649	14	-0.77457	0.46632	-0.66592	0.57884	
15	0.38000	-0.45520	0.28085	-40.704	0.18506	15	-0.68873	0.37773	-0.57507	0.49999	
16	0.41000	-0.36685	0.20619	-39.709	0.19264	16	-0.60236	0.29252	-0.48474	0.42411	
17	0.44000	-0.27850	0.13395	-38.859	0.19923	17	-0.51554	0.21070	-0.39485	0.35100	
18	0.47000	-0.19015	0.06370	-38.132	0.20480	18	-0.42839	0.13210	-0.30531	0.28029	
19	0.50000	-0.10180	-0.00484	-37.488	0.20934	19	-0.34100	0.05638	-0.21600	0.21152	
20	0.53000	-0.01345	-0.07188	-36.902	0.21282	20	-0.25338	-0.01684	-0.12692	0.14425	
21	0.56000	0.07490	-0.13756	-36.357	0.21520	21	-0.16550	-0.08789	-0.03810	0.07822	
22	0.59000	0.16325	-0.20198	-35.845	0.21646	22	-0.07734	-0.15697	0.05044	0.01321	
23	0.62000	0.25160	-0.26524	-35.361	0.21658	23	0.01111	-0.22421	0.13869	-0.05091	
24	0.65000	0.33995	-0.32739	-34.896	0.21537	24	0.09987	-0.28972	0.22663	-0.11425	
25	0.68000	0.42830	-0.38850	-34.444	0.21261	25	0.18893	-0.35355	0.31427	-0.17692	
26	0.71000	0.51665	-0.44859	-33.998	0.20803	26	0.27834	-0.41572	0.40156	-0.23907	
27	0.74000	0.60500	-0.50768	-33.552	0.20136	27	0.36817	-0.47617	0.48843	-0.30083	
28	0.77000	0.69335	-0.56579	-33.113	0.19236	28	0.45849	-0.53483	0.57481	-0.36236	
29	0.80000	0.78170	-0.62294	-32.684	0.18079	29	0.54935	-0.59158	0.66064	-0.42378	
30	0.83000	0.87005	-0.67916	-32.257	0.16639	30	0.64081	-0.64634	0.74589	-0.48523	
31	0.86000	0.95840	-0.73445	-31.816	0.14891	31	0.73288	-0.69902	0.83051	-0.54685	
32	0.89000	1.04675	-0.78876	-31.331	0.12825	32	0.82565	-0.74952	0.91445	-0.60880	
33	0.92000	1.13510	-0.84197	-30.774	0.10424	33	0.91915	-0.79772	0.99765	-0.67118	
34	0.95000	1.22345	-0.89394	-30.149	0.07619	34	1.01340	-0.84353	1.08009	-0.73398	
35	0.97500	1.29707	-0.93623	-29.589	0.04952	35	1.10843	-0.88675	1.16176	-0.79719	
36	1.00000	1.37070	-0.97754	-29.006	0.02116	36	1.20431	-0.92688	1.24258	-0.86100	
						37	1.28485	-0.95776	1.30930	-0.91470	
						38	1.35556	-0.98328	1.36759	-0.96168	
						39	1.36335	-0.98346	1.37189	-0.96838	
						40	1.37070	-0.97754	1.37070	-0.97754	

CHORD 3.81158 CAMBER 18.644 STAGGER -39.408

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 9

MEANLINE DATA						SURFACE COORDINATES					
PT	PCT X	X	Y	B+M	T (M)	PT	XS	YS	XP	YP	
1	0.	-1.62947	1.30540	-46.064	0.01882	1	-1.62947	1.30540	-1.62947	1.30540	
2	0.02500	-1.55272	1.22563	-46.140	0.03462	2	-1.63257	1.29808	-1.62203	1.30822	
3	0.05000	-1.47597	1.14570	-46.175	0.05039	3	-1.63022	1.29165	-1.61570	1.30563	
4	0.07500	-1.39921	1.06578	-46.122	0.06604	4	-1.56520	1.21364	-1.54024	1.23762	
5	0.10000	-1.32246	0.98618	-45.938	0.08150	5	-1.49414	1.12825	-1.45779	1.16314	
6	0.12500	-1.24571	0.90730	-45.598	0.09663	6	-1.42302	1.04289	-1.37541	1.08867	
7	0.15000	-1.16895	0.82959	-45.084	0.11134	7	-1.35174	0.95784	-1.29318	1.01452	
8	0.17500	-1.09220	0.75349	-44.396	0.12554	8	-1.28023	0.87350	-1.21119	0.94111	
9	0.20000	-1.01545	0.67942	-43.538	0.13914	9	-1.20838	0.79028	-1.12953	0.86890	
10	0.23000	-0.92334	0.59369	-42.317	0.15456	10	-1.13611	0.70864	-1.04829	0.79834	
11	0.26000	-0.83124	0.51180	-40.946	0.16891	11	-1.06337	0.62899	-0.96752	0.72985	
12	0.29000	-0.73913	0.43383	-39.561	0.18214	12	-0.97537	0.53655	-0.87131	0.65084	
13	0.32000	-0.64703	0.35945	-38.301	0.19424	13	-0.88659	0.44801	-0.77589	0.57559	
14	0.35000	-0.55493	0.28818	-37.189	0.20521	14	-0.79714	0.36361	-0.68113	0.50404	
15	0.38000	-0.46282	0.21955	-36.204	0.21503	15	-0.70723	0.28324	-0.58683	0.43567	
16	0.41000	-0.37072	0.15325	-35.299	0.22366	16	-0.61695	0.20644	-0.49291	0.36992	
17	0.44000	-0.27861	0.08909	-34.426	0.23109	17	-0.52633	0.13280	-0.39932	0.30631	
18	0.47000	-0.18651	0.02695	-33.595	0.23727	18	-0.43534	0.06198	-0.30610	0.24452	
19	0.50000	-0.09440	0.00333	-32.823	0.24217	19	-0.34394	0.00621	-0.21329	0.18440	
20	0.53000	-0.00230	-0.09192	-32.112	0.24575	20	-0.25215	-0.07187	-0.12087	0.12577	
21	0.56000	0.08980	-0.14898	-31.456	0.24797	21	-0.16004	-0.13508	-0.02877	0.06843	
22	0.59000	0.18191	-0.20464	-30.835	0.24880	22	-0.06762	-0.19600	0.06302	0.01215	
23	0.62000	0.27401	-0.25896	-30.224	0.24815	23	0.02510	-0.25475	0.15450	-0.04322	
24	0.65000	0.36612	-0.31196	-29.615	0.24584	24	0.11815	-0.31146	0.24567	-0.09783	
25	0.68000	0.45822	-0.36367	-29.000	0.24161	25	0.21155	-0.36617	0.33647	-0.15175	
26	0.71000	0.55032	-0.41407	-28.376	0.23524	26	0.30537	-0.41883	0.42686	-0.20510	
27	0.74000	0.64243	-0.46317	-27.740	0.22651	27	0.39965	-0.46933	0.51679	-0.25801	
28	0.77000	0.73453	-0.51095	-27.097	0.21521	28	0.49442	-0.51756	0.60622	-0.31058	
29	0.80000	0.82664	-0.55742	-26.453	0.20114	29	0.58971	-0.56341	0.69514	-0.36293	
30	0.83000	0.91874	-0.60261	-25.812	0.18404	30	0.68552	-0.60674	0.78355	-0.41516	
31	0.86000	1.01084	-0.64653	-25.180	0.16370	31	0.78184	-0.64746	0.87143	-0.46739	
32	0.89000	1.10295	-0.68922	-24.560	0.14007	32	0.87867	-0.68545	0.95881	-0.51977	
33	0.92000	1.19505	-0.73073	-23.956	0.11301	33	0.97602	-0.72060	1.04567	-0.57246	
34	0.95000	1.28716	-0.77108	-23.362	0.08178	34	1.07384	-0.75292	1.13206	-0.62552	
35	0.97500	1.36391	-0.80384	-22.871	0.05232	35	1.17211	-0.78236	1.21800	-0.67909	
36	1.00000	1.44066	-0.83583	-22.380	0.02111	36	1.27094	-0.80861	1.30337	-0.73354	
						37	1.35374	-0.82794	1.37405	0.77974	
						38	1.42629	-0.84346	1.43586	-0.82030	
						39	1.43405	-0.84262	1.44083	-0.82653	
						40	1.44066	-0.83583	1.44066	-0.83583	

CHORD 3 74308 CAMBER 23.684 STAGGER -34.893

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 10

MEANLINE DATA										SURFACE COORDINATES									
PT	PLT Y	X	Y	B*M	T(M)	PT	XS	YS	XP	YP									
1	0	1 63192	1 12422	-44.303	0.02118	1	-1.63192	1.12422	-1.63192	1.12422									
2	0.02500	-1.55257	1 04717	-44.009	0.03964	2	-1 63519	1.11579	-1.62367	1.12769									
3	0.05000	-1.47322	0.27095	-43.682	0.05794	3	-1.63237	1.10864	-1.61636	1.12507									
4	0.07500	-1.39387	0.89567	-43.288	0.07601	4	-1.56634	1.03292	-1.53880	1.06143									
5	0.10000	-1.31452	0.82154	-42.795	0.09375	5	-1.49323	0.95000	-1.45321	0.99190									
6	0.12500	-1.23517	0.74883	-42.185	0.11106	6	-1.41993	0.86801	-1.36781	0.92333									
7	0 15000	-1.15582	0.67782	-41.444	0.12783	7	-1.34637	0.78715	-1.28268	0.85594									
8	0 17500	-1.07648	0.60879	-40.569	0.14395	8	-1.27246	0.70768	-1.19788	0.78997									
9	0 20000	-0.99713	0.54202	-39.567	0.15935	9	-1 19813	0.62991	-1.11352	0.72573									
10	0.23000	-0.90191	0.46517	-38.218	0.17676	10	-1.12329	0.55412	-1.02966	0.66347									
11	0.26000	-0.80669	0.39212	-36.755	0.19293	11	-1.04788	0.48061	-0.94638	0.60344									
12	0.29000	-0.71147	0.32292	-35.265	0.20782	12	-0.95658	0.39574	-0.84723	0.53461									
13	0.32000	-0.61625	0.25736	-33.841	0.22138	13	-0.86441	0.31483	-0.74896	0.46941									
14	0.35000	-0.52103	0.19512	-32.509	0.23358	14	-0.77146	0.23807	-0.65147	0.40776									
15	0.38000	-0.42581	0.13589	-31.271	0.24437	15	-0.67789	0.16542	-0.55461	0.34930									
16	0.41000	-0.33059	0.07938	-30.114	0.25373	16	-0.58380	0.09663	-0.45826	0.29361									
17	0.44000	-0.23537	0.02537	-29.021	0.26164	17	-0.48924	0.03146	-0.36239	0.24033									
18	0.47000	-0.14015	-0.02632	-27.970	0.26804	18	-0.39424	-0.03036	-0.26694	0.18913									
19	0.50000	-0.04493	-0.07579	-26.943	0.27288	19	-0.29884	-0.08903	-0.17191	0.13977									
20	0.53000	0.05029	-0.12313	-25.930	0.27613	20	-0.20301	-0.14468	-0.07730	0.09205									
21	0.56000	0.14550	-0.16840	-24.927	0.27773	21	-0.10676	-0.19742	0.01689	0.04584									
22	0.59000	0.24072	-0.21166	-23.943	0.27763	22	-0.01009	-0.24730	0.11066	0.00103									
23	0.62000	0.33594	-0.25299	-22.986	0.27571	23	0.08698	-0.29433	0.20403	-0.04247									
24	0.65000	0.43116	-0.29246	-22.044	0.27181	24	0.18439	-0.33853	0.29706	-0.08479									
25	0.68000	0.52638	-0.33011	-21.103	0.26573	25	0.28211	-0.37990	0.38978	-0.12608									
26	0.71000	0.62160	-0.36596	-20.146	0.25729	26	0.38015	-0.41843	0.48217	-0.16649									
27	0.74000	0.71682	-0.39997	-19.170	0.24633	27	0.47854	-0.45407	0.57422	-0.20616									
28	0.77000	0.81204	-0.43218	-18.213	0.23270	28	0.57729	-0.48673	0.66591	-0.24518									
29	0.80000	0.90726	-0.46268	-17.317	0.21624	29	0.67637	-0.51631	0.75727	-0.28364									
30	0.83000	1.00248	-0.49161	-16.500	0.19674	30	0.77567	-0.54270	0.84840	-0.32166									
31	0.86000	1.09770	-0.51915	-15.769	0.17404	31	0.87508	-0.56590	0.93944	-0.35946									
32	0.89000	1.19292	-0.54543	-15.107	0.14807	32	0.97454	-0.58593	1.03042	-0.39729									
33	0.92000	1.28813	-0.57059	-14.493	0.11870	33	1.07405	-0.60289	1.12134	-0.43540									
34	0.95000	1.38335	-0.59468	-13.912	0.08523	34	1.17362	-0.61691	1.21221	-0.47396									
35	0.97500	1.46270	-0.61399	-13.440	0.05399	35	1.27328	-0.62805	1.30299	-0.51313									
36	1.00000	1.54205	-0.63261	-12.974	0.02106	36	1.37311	-0.63605	1.39360	-0.55332									
						37	1.45643	-0.64025	1.46898	-0.58773									
						38	1.52914	-0.64260	1.53485	-0.61797									
						39	1.53665	-0.64043	1.54072	-0.62337									
						40	1.54205	-0.63261	1.54205	-0.63261									

CHORD 3.62775 CAMBER 31 329 STAGGER -28.965

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 11

MEANLINE DATA										SURFACE COORDINATES			
PT	PCT X	X	Y	B+M	T(M)	PT	XS	YS	XP	YP			
1	0.	-1.62430	0.91073	-41.252	0.02620	1	-1.62430	0.91073	-1.62430	0.91073			
2	0.02500	-1.54284	0.83981	-40.836	0.04522	2	-1.62779	0.90005	-1.61435	0.91558			
3	0.05000	-1.46138	0.76997	-40.367	0.06410	3	-1.62287	0.89142	-1.60511	0.91285			
4	0.07500	-1.37993	0.70139	-39.793	0.08273	4	-1.55763	0.82270	-1.52806	0.85691			
5	0.10000	-1.29847	0.63438	-39.061	0.10103	5	-1.48214	0.74555	-1.44062	0.79439			
6	0.12500	-1.21701	0.56930	-38.156	0.11886	6	-1.40640	0.66961	-1.35345	0.73318			
7	0.15000	-1.13555	0.50650	-37.078	0.13613	7	-1.33030	0.59516	-1.26604	0.67361			
8	0.17500	-1.05410	0.44625	-35.880	0.15275	8	-1.25373	0.52257	-1.18029	0.61603			
9	0.20000	-0.97264	0.38867	-34.625	0.16868	9	-1.17659	0.45220	-1.09452	0.56080			
10	0.23000	-0.87489	0.32308	-33.086	0.18682	10	-1.09886	0.38437	-1.00933	0.50813			
11	0.26000	-0.77714	0.26125	-31.546	0.20382	11	-1.02056	0.31926	-0.92472	0.45807			
12	0.29000	-0.67939	0.20303	-29.999	0.21961	12	-0.92588	0.24482	-0.82390	0.40135			
13	0.32000	-0.58164	0.14835	-28.438	0.23414	13	-0.83046	0.17440	-0.72382	0.34809			
14	0.35000	-0.48389	0.09713	-26.879	0.24738	14	-0.73429	0.10794	-0.62449	0.29813			
15	0.38000	-0.38614	0.04921	-25.349	0.25929	15	-0.63739	0.04541	-0.52589	0.25130			
16	0.41000	-0.28840	0.00445	-23.874	0.26983	16	-0.53981	-0.01320	-0.42797	0.20745			
17	0.44000	-0.19065	-0.03739	-22.475	0.27895	17	-0.44165	-0.06795	-0.33064	0.16638			
18	0.47000	-0.09290	-0.07649	-21.139	0.28661	18	-0.34300	-0.11893	-0.23379	0.12782			
19	0.50000	0.00485	-0.11303	-19.851	0.29278	19	-0.24396	-0.16627	-0.13733	0.09149			
20	0.53000	0.10260	-0.14711	-18.598	0.29741	20	-0.14458	-0.21016	-0.04122	0.05717			
21	0.56000	0.20035	-0.17884	-17.371	0.30045	21	-0.04486	-0.25072	0.05456	0.02467			
22	0.59000	0.29810	-0.20829	-16.165	0.30187	22	0.05518	-0.28805	0.15003	-0.00617			
23	0.62000	0.39585	-0.23553	-14.977	0.30159	23	0.15550	-0.32221	0.24520	-0.03546			
24	0.65000	0.49360	-0.26061	-13.810	0.29935	24	0.25608	-0.35326	0.34012	-0.06332			
25	0.68000	0.59135	-0.28361	-12.670	0.29486	25	0.35688	-0.38120	0.43482	-0.08986			
26	0.71000	0.68910	-0.30458	-11.561	0.28778	26	0.45787	-0.40596	0.52933	-0.11526			
27	0.74000	0.78684	-0.32362	-10.476	0.27777	27	0.55901	-0.42744	0.62368	-0.13977			
28	0.77000	0.88459	-0.34073	-9.380	0.26453	28	0.66026	-0.44555	0.71793	-0.16362			
29	0.80000	0.98234	-0.35589	-8.244	0.24774	29	0.76159	-0.46019	0.81210	-0.18705			
30	0.83000	1.08009	-0.36903	-7.059	0.22705	30	0.86304	-0.47123	0.90615	-0.21023			
31	0.86000	1.17784	-0.38008	-5.830	0.20215	31	0.96458	-0.47848	1.00010	-0.23330			
32	0.89000	1.27559	-0.38899	-4.584	0.17292	32	1.06614	-0.48170	1.09404	-0.25637			
33	0.92000	1.37334	-0.39576	-3.342	0.13907	33	1.16757	-0.48063	1.18811	-0.27953			
34	0.95000	1.47109	-0.40040	-2.097	0.09947	34	1.26868	-0.47517	1.28250	-0.30280			
35	0.97500	1.55254	-0.40264	-1.047	0.06172	35	1.36928	-0.46517	1.37739	-0.32634			
36	1.00000	1.63400	-0.40338	0.009	0.02158	36	1.46927	-0.45010	1.47291	-0.35070			
						37	1.55198	-0.43350	1.55311	-0.37178			
						38	1.62349	-0.41678	1.62357	-0.38996			
						39	1.63036	-0.41271	1.63066	-0.39435			
						40	1.63400	-0.40338	1.63400	-0.40338			

CHORD 3.51332 CAMBER 41.161 STAGGER -21.965

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 12

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B+M	T (M)	PT	XS	YS	XP	YP									
1	0.	-1.64355	0.79816	-37.692	0.03474	1	-1.64855	0.79816	-1.64855	0.79816									
2	0.02500	-1.56604	0.73513	-37.048	0.05662	2	-1.65236	0.78358	-1.63577	0.80551									
3	0.05000	-1.48352	0.67360	-36.369	0.07830	3	-1.64657	0.77240	-1.62317	0.80282									
4	0.07500	-1.40101	0.61363	-35.644	0.09964	4	-1.58309	0.71254	-1.54898	0.75773									
5	0.10000	-1.31850	0.55529	-34.867	0.12052	5	-1.50674	0.64218	-1.46031	0.70513									
6	0.12500	-1.23598	0.49868	-34.029	0.14084	6	-1.43004	0.57314	-1.37198	0.65412									
7	0.15000	-1.15347	0.44389	-33.123	0.16049	7	-1.35294	0.50585	-1.28405	0.60473									
8	0.17500	-1.07095	0.39104	-32.145	0.17938	8	-1.27539	0.44032	-1.19657	0.55704									
9	0.20000	-0.98844	0.34022	-31.097	0.19739	9	-1.19732	0.37668	-1.10962	0.51110									
10	0.23000	-0.88942	0.28205	-29.752	0.21773	10	-1.11867	0.31510	-1.02323	0.46698									
11	0.26000	-0.79041	0.22706	-28.324	0.23655	11	-1.03941	0.25571	-0.93747	0.42473									
12	0.29000	-0.69139	0.17533	-26.833	0.25372	12	-0.94345	0.18753	-0.83540	0.37656									
13	0.32000	-0.59237	0.12688	-25.305	0.26911	13	-0.84652	0.12294	-0.73429	0.33118									
14	0.35000	-0.49336	0.08168	-23.762	0.28262	14	-0.74865	0.06213	-0.63412	0.28853									
15	0.38000	-0.39434	0.03966	-22.233	0.29421	15	-0.64988	0.00524	-0.53486	0.24852									
16	0.41000	-0.29532	0.00068	-20.747	0.30376	16	-0.55030	-0.04765	-0.43642	0.21101									
17	0.44000	-0.19630	-0.03542	-19.329	0.31120	17	-0.45000	-0.09651	-0.33868	0.17582									
18	0.47000	-0.09729	-0.06885	-17.991	0.31644	18	-0.34912	-0.14135	-0.24152	0.14271									
19	0.50000	0.00173	-0.09980	-16.736	0.31938	19	-0.24781	-0.18225	-0.14480	0.11141									
20	0.53000	0.10075	-0.12845	-15.554	0.31996	20	-0.14616	-0.21933	-0.04842	0.08164									
21	0.56000	0.19976	-0.15496	-14.423	0.31811	21	-0.04426	-0.25272	0.04771	0.05313									
22	0.59000	0.29878	-0.17940	-13.304	0.31389	22	0.05785	-0.28257	0.14364	0.02567									
23	0.62000	0.39780	-0.20178	-12.166	0.30736	23	0.16015	-0.30900	0.23938	-0.00092									
24	0.65000	0.49681	-0.22208	-10.994	0.29859	24	0.26266	-0.33213	0.33490	-0.02666									
25	0.68000	0.59583	-0.24023	-9.781	0.28761	25	0.36541	-0.35201	0.43018	-0.05155									
26	0.71000	0.69485	-0.25619	-8.513	0.27448	26	0.46834	-0.36863	0.52529	-0.07552									
27	0.74000	0.79386	-0.26384	-7.172	0.25922	27	0.57140	-0.38195	0.62026	-0.09852									
28	0.77000	0.89288	-0.28104	-5.714	0.24190	28	0.67453	-0.39191	0.71516	-0.12046									
29	0.80000	0.99190	-0.28957	-4.106	0.22257	29	0.77768	-0.39844	0.81004	-0.14124									
30	0.83000	1.09091	-0.29518	-2.350	0.20125	30	0.88084	-0.40139	0.90492	-0.16069									
31	0.86000	1.18993	-0.29762	-0.462	0.17800	31	0.98393	-0.40057	0.99987	-0.17857									
32	0.89000	1.28895	-0.29672	1.520	0.15288	32	1.08679	-0.39572	1.09504	-0.19464									
33	0.92000	1.38796	-0.29233	3.563	0.12587	33	1.18921	-0.38662	1.19065	-0.20863									
34	0.95000	1.48698	-0.28434	5.677	0.09660	34	1.29098	-0.37313	1.28692	-0.22031									
35	0.97500	1.58549	-0.27482	7.496	0.07038	35	1.39188	-0.35515	1.38405	-0.22952									
36	1.00000	1.68201	-0.26261	9.335	0.04323	36	1.49176	-0.33240	1.48220	-0.23628									
						37	1.57403	-0.30970	1.56490	-0.23993									
						38	1.63477	-0.29080	1.62711	-0.24118									
						39	1.64736	-0.28172	1.64272	-0.24671									
						40	1.65201	-0.26261	1.65201	-0.26261									

CHORD 3.46683 CAMBER 47.027 STAGGER -17.817

PHASE V ROTOR

NB 20

MERIDIONAL AIRFOIL GEOMETRY - STREAMLINE 13

MEANLINE DATA										SURFACE COORDINATES									
PT	PCT X	X	Y	B+M	T(M)	PT	XS	YS	XP	YP									
1	0.	-1.68831	0.69983	-32.270	0.05298	1	-1.68831	0.69983	-1.68831	0.69983									
2	0.02500	-1.60450	0.64714	-32.037	0.07278	2	-1.69201	0.67736	-1.66984	0.71281									
3	0.05000	-1.52069	0.59498	-31.751	0.09261	3	-1.68154	0.66113	-1.65050	0.71041									
4	0.07500	-1.43688	0.54346	-31.389	0.11236	4	-1.62381	0.61630	-1.58520	0.67799									
5	0.10000	-1.35307	0.49276	-30.934	0.13187	5	-1.54506	0.55560	-1.49632	0.63435									
6	0.12500	-1.26926	0.44307	-30.371	0.15100	6	-1.46614	0.49550	-1.40762	0.59142									
7	0.15000	-1.18545	0.39461	-29.684	0.16965	7	-1.38696	0.43621	-1.31918	0.54932									
8	0.17500	-1.10163	0.34761	-28.858	0.18769	8	-1.30743	0.37793	-1.23108	0.50822									
9	0.20000	-1.01782	0.30232	-27.881	0.20501	9	-1.22745	0.32092	-1.14344	0.46830									
10	0.23000	-0.91725	0.25060	-26.517	0.22474	10	-1.14693	0.26542	-1.05634	0.42990									
11	0.26000	-0.81668	0.20207	-24.975	0.24320	11	-1.06576	0.21172	-0.96989	0.39293									
12	0.29000	-0.71610	0.15696	-23.323	0.26024	12	-0.96742	0.15005	-0.86708	0.35115									
13	0.32000	-0.61553	0.11534	-21.637	0.27573	13	-0.86802	0.09184	-0.76533	0.31230									
14	0.35000	-0.51496	0.07711	-19.994	0.28962	14	-0.76762	0.03747	-0.66459	0.27644									
15	0.38000	-0.41438	0.04205	-18.469	0.30182	15	-0.66636	-0.01282	-0.56469	0.24349									
16	0.41000	-0.31381	0.00980	-17.124	0.31225	16	-0.56447	-0.05897	-0.46544	0.21319									
17	0.44000	-0.21323	-0.02005	-15.958	0.32082	17	-0.46219	-0.10109	-0.36657	0.18519									
18	0.47000	-0.11266	-0.04780	-14.899	0.32745	18	-0.35978	-0.13941	-0.26784	0.15900									
19	0.50000	-0.01209	-0.07360	-13.881	0.33202	19	-0.25734	-0.17428	-0.16913	0.13418									
20	0.53000	0.08849	-0.09750	-12.850	0.33445	20	-0.15476	-0.20602	-0.07057	0.11042									
21	0.56000	0.18906	-0.11945	-11.756	0.33465	21	-0.05191	-0.23476	0.02774	0.08756									
22	0.59000	0.28963	-0.13930	-10.554	0.33260	22	0.05130	-0.26054	0.12568	0.06553									
23	0.62000	0.39021	-0.15685	-9.210	0.32832	23	0.15497	-0.28327	0.22315	0.04436									
24	0.65000	0.49078	-0.17183	-7.710	0.32188	24	0.25918	-0.30279	0.32009	0.02418									
25	0.68000	0.59135	-0.18399	-6.041	0.31336	25	0.36393	-0.31889	0.41648	0.00519									
26	0.71000	0.69193	-0.19302	-4.200	0.30282	26	0.46919	-0.33132	0.51237	-0.01235									
27	0.74000	0.79250	-0.19866	-2.183	0.29031	27	0.57486	-0.33980	0.60784	-0.02817									
28	0.77000	0.89308	-0.20059	0.008	0.27585	28	0.68084	-0.34403	0.70302	-0.04202									
29	0.80000	0.99365	-0.19853	2.368	0.25947	29	0.78697	-0.34371	0.79803	-0.05361									
30	0.83000	1.09422	-0.19218	4.882	0.24115	30	0.89310	-0.33852	0.89306	-0.06267									
31	0.86000	1.19480	-0.18126	7.523	0.22091	31	0.99901	-0.32816	0.98829	-0.06890									
32	0.89000	1.29537	-0.16554	10.255	0.19883	32	1.10448	-0.31232	1.08396	-0.07204									
33	0.92000	1.39594	-0.14481	13.070	0.17483	33	1.20926	-0.29076	1.18034	-0.07176									
34	0.95000	1.49652	-0.11884	15.911	0.14840	34	1.31307	-0.26337	1.27767	-0.06772									
35	0.97500	1.58033	-0.09301	18.336	0.12437	35	1.41568	-0.22997	1.37620	-0.05965									
36	1.00000	1.66414	-0.06326	20.743	0.09934	36	1.51686	-0.19020	1.47618	-0.04748									
						37	1.59989	-0.15204	1.56077	-0.03398									
						38	1.63657	-0.13364	1.59933	-0.02673									
						39	1.66154	-0.10839	1.63676	-0.02027									
						40	1.66414	-0.06326	1.66414	-0.06326									

CHORD 3.43821 CAMBER 53.013 STAGGER -12.823

3. PLANE SECTION BLADE COORDINATES

Figure 79 shows the stacked Phase V rotor plane sections. The following tabulation gives the coordinates for these sections. These sections are spaced one half inch apart, beginning at the tip height of 8.5 inches and progressing inward to 2.5 inches. These are the same section locations as given for the baseline rotor in Reference 1. Also included in the tabulation are coordinates for the section meanline, the meanline angle, and the section percent thickness at each point. Plane section chord, camber angle, and stagger angle are also given. These coordinates are intended to represent the blade under hot running conditions and do not include any corrections for blade untwist, meanline deformation, centrifugal growth or thermal growth.

•7PC•

PHASE IV ROTOR

STAGE 4. ROTOR NB 20
COORD SYSTEM ORIGIN Z -7 03590 R O. MU O. ETA O
SECTION NO 1 SECTION AA RHO 8 5000

MEANLINE INPUT DATA

PI	ALPHA	ZETA*	THICKNESS	UPSILON
1	1 09100	57.228	0.01888	1.78987
2	-1.04534	57.658	0.02240	1.71816
3	-0 95280	58.503	0.02965	1.56930
4	-0 85882	59.373	0.03710	1.41288
5	0 76312	60.278	0.04471	1.24818
6	-0 65610	61.280	0.05313	1.05690
7	-0 53753	62.297	0.06226	0.83563
8	-0 41726	63.080	0.07097	0.60229
9	0 29565	63.350	0.07888	0.36099
10	0 17353	63.030	0.08554	0.11884
11	0 05146	62.383	0.09069	-0.11792
12	0 06999	61.678	0.09424	-0.34669
13	0 19042	61.198	0.09619	-0.56773
14	0 30919	60.954	0.09655	-0.78282
15	0 42600	60.856	0.09416	-0.99301
16	0 54061	60.930	0.08672	-1.19923
17	0 65248	61.039	0.07196	-1.40182
18	0 76150	60.773	0.04792	-1.59907
19	0 85033	60.143	0.01977	-1.75626

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0 00467	-1.09100	1.78987	57.439
2	0 0250	0 00560	-1.04246	1.71361	57.703
3	0 0500	0 00653	-0.99393	1.63610	58.185
4	0 0750	0 00748	-0.94540	1.55716	58.641
5	0 1000	0 00843	-0.89686	1.47683	59.080
6	0 1250	0 00938	-0.84833	1.39510	59.508
7	0 1500	0 01034	-0.79980	1.31197	59.939
8	0 1750	0 01129	-0.75126	1.22737	60.373
9	0 2000	0 01224	-0.70273	1.14122	60.832
10	0 2300	0 01337	-0.64449	1.03568	61.388
11	0 2600	0 01448	-0.58625	0.92771	61.915
12	0 2900	0 01558	-0.52801	0.81744	62.394
13	0 3200	0 01664	-0.46977	0.70508	62.792
14	0 3500	0 01765	-0.41153	0.59101	63.097
15	0 3800	0 01862	-0.35329	0.47571	63.284
16	0 4100	0 01952	-0.29505	0.35979	63.340
17	0 4400	0 02035	-0.23681	0.24392	63.267

PHASE IV ROTOR

7PC

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O ETA O.
 SECTION NO 1 SECTION AA RIHO 8.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCI	AL	T/C	ALPHA	UPSILON	ZETA
18	0	4700	0.02110	-0.17857	0.12875	63.063
19	0	5000	0.02176	-0.12033	0.01485	62.769
20	0	5300	0.02234	-0.06209	-0.09757	62.448
21	0	5600	0.02282	-0.00385	-0.20840	62.110
22	0	5900	0.02322	0.05439	-0.31767	61.778
23	0	6200	0.02352	0.11263	-0.42547	61.474
24	0	6500	0.02374	0.17087	-0.53212	61.261
25	0	6800	0.02387	0.22911	-0.63802	61.129
26	0	7100	0.02390	0.28735	-0.74341	61.026
27	0	7400	0.02379	0.34559	-0.84841	60.950
28	0	7700	0.02348	0.40383	-0.95317	60.912
29	0	8000	0.02288	0.46207	-1.05784	60.913
30	0	8300	0.02190	0.52031	-1.16264	60.969
31	0	8600	0.02044	0.57855	-1.26778	61.066
32	0	8900	0.01844	0.63679	-1.37333	61.153
33	0	9200	0.01582	0.69503	-1.47914	61.150
34	0	9500	0.01241	0.75327	-1.58433	60.852
35	0	9750	0.00885	0.80180	-1.67070	60.514
36	1	0000	0.00489	0.85033	-1.75626	60.397

CHORD 4 0427 STAGGER 61.301 CAMBER -2.958

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0	00467	-1.09100	1.78987	-1 09100
2	0	00467	-1.09528	1.78344	-1 08298
3	0	00467	-1.09401	1.77673	-1 07746
4	0	00560	-1.05202	1.70756	-1 03290
5	0	00653	-1.00515	1.62914	-0 98271
6	0	00748	-0.95831	1.54930	-0 93249
7	0	00843	-0.91148	1.46807	-0 88224
8	0	00938	-0.86467	1.38548	-0 83198
9	0	01034	-0.81788	1.30151	-0 78171
10	0	01129	-0.77110	1.21609	-0 73142
11	0	01224	-0.72433	1.12916	-0 68113
12	0	01337	-0.66821	1.02274	-0 62077
13	0	01448	-0.61208	0.91393	-0 56042
14	0	01558	-0.55591	0.80285	-0 50011

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 STAGE 4. ROTOR NB 20
 SECTION NO 1 SECTION AA RHO 8.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	UPPER ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0 01664	-0.49968	0.68970	-0.43986	0.72045
16	0 01765	-0.44335	0.57486	-0.37971	0.60716
17	0 01862	-0.38691	0.45879	-0.31967	0.49263
18	0 01952	-0.33031	0.34209	-0.25979	0.37750
19	0 02035	-0.27355	0.22542	-0.20007	0.26243
20	0 02110	-0.21659	0.10943	-0.14055	0.14807
21	0 02176	-0.15944	-0.00528	-0.08122	0.03497
22	0 02234	-0.10212	-0.11845	-0.02206	-0.07668
23	0 02282	-0.04463	-0.22998	0.03693	-0.18682
24	0 02322	0 01303	-0.33987	0.09575	-0.29548
25	0 02352	0 07085	-0.44818	0 15441	0.40277
26	0 02374	0.12879	-0.55519	0.21295	-0.50904
27	0 02387	0.18685	-0.66132	0.27137	-0.61471
28	0 02390	0.24508	-0.76681	0.32962	-0.72000
29	0 02379	0.30354	-0.87177	0.38764	-0.82506
30	0 02348	0.36235	-0.97624	0.44531	-0.93009
31	0 02288	0.42165	-1.08032	0.50249	-1.03536
32	0 02190	0.48160	-1.18412	0.55901	-1.14115
33	0 02044	0.54238	-1.28777	0.61472	-1.24778
34	0 01844	0.60414	-1.39131	0.66944	-1.35534
35	0 01582	0.66702	-1.49457	0.72304	-1.46371
36	0 01241	0.73136	-1.59655	0.77518	-1.57211
37	0 00885	0.78623	-1.67950	0.81737	-1.66189
38	0 00489	0.83615	-1.75299	0.85477	-1.74240
39	0 00489	0.84195	-1.75722	0.85542	-1.74962
40	0 00489	0.85033	-1.75626	0.85033	-1.75626
LE RAD	0 00965	CENTER AT ALPHA	-1.08578	UPSILON	1.78176
TE RAD	0 01075	CENTER AT ALPHA	0.84502	UPSILON	-1.74691

•ZPC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN	Z	-7	03590	R	O.	MU	O.	ETA	O
STAGE	4	ROTOR		NB		20			
SECTION NO	1	SECTION AA		RHO		8.5000			
CHORD	4	STAGGER		CAMBER					
	0427	61.302		-2.958					
AREA	0	283342	SURFACE ARC LENGTH		8	11230			
SECTION C.G.		ALPHA		UPSILON					
SURFACESURFACE	SECTION C G.	-0.01490		-0.16795					
BLADE AXIS		-0.01976		-0.15372					
STACKING AXIS (RADIAL)		-0.01976		-0.15372					
		-0.00220		0.					

PHASE IV ROTOR

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COORD SYSTEM ORIGIN Z -7.03590 R O MU O. ETA O.
 SECTION NO 2 SECTION BB RHO 8.0000

MEANLINE INPUT DATA

PT	ALPHA	ZETA*	THICKNESS	UPSILON
1	1 19582	55.315	0.01973	1.75031
2	1 14421	55.762	0.02381	1.67508
3	1 03969	56.611	0.03223	1.51907
4	0 93344	57.423	0.04092	1.35528
5	0 82548	58.205	0.04975	1.18377
6	0 70486	59.030	0.05947	0.98602
7	0 57131	59.646	0.06978	0.76043
8	0 43599	59.551	0.07927	0.52927
9	-0 29945	58.797	0.08742	0.29990
10	-0 16217	57.653	0.09386	0.07809
11	-0 02487	56.483	0.09847	-0.13396
12	0 11201	55.515	0.10133	-0.33691
13	0 24812	54.793	0.10245	-0.53245
14	0 38314	54.273	0.10163	-0.72205
15	0.51667	53.886	0.09743	-0.90544
16	0.64833	53.599	0.08807	-1.08613
17	0 77783	53.427	0.07207	-1.26121
18	0 90490	53.377	0.04804	-1.43235
19	1 00875	53.356	0.02084	-1.57224

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0 00495	-1.19582	1.75031	55.315
2	0 0250	0.00604	-1.14070	1.66993	55.790
3	0 0500	0 00715	-1.08559	1.58819	56.228
4	0 0750	0 00827	-1.03047	1.50507	56.682
5	0 1000	0 00940	-0.97536	1.42051	57.117
6	0 1250	0.01053	-0.92025	1.33459	57.519
7	0 1500	0.01167	-0.86513	1.24736	57.912
8	0 1750	0.01279	-0.81002	1.15878	58.307
9	0 2000	0 01391	-0.75490	1.06884	58.691
10	0 2300	0.01523	-0.68877	0.95915	59.129
11	0 2600	0.01653	-0.62263	0.84773	59.460
12	0 2900	0 01777	-0.55649	0.73514	59.653
13	0 3200	0.01896	-0.49035	0.62205	59.678
14	0 3500	0 02007	-0.42422	0.50926	59.519
15	0 3800	0.02110	-0.35808	0.39754	59.205
16	0 4100	0 02202	-0.29194	0.28752	58.746
17	0 4400	0.02285	-0.22581	0.17968	58.208

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O ETA O
 STAGE 4. ROTOR NB 20

SECTION NO 2 SECTION BB RHO 8.0000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZE1A*
18	0 4700	0 02356	-0 15967	0 07414	57 640
19	0 5000	0 02417	-0 09353	-0 02909	57 070
20	0 5300	0 02468	-0 02739	-0 13015	56 526
21	0 5600	0 02508	0 03874	-0 22920	56 024
22	0 5900	0 02538	0 10488	-0 32651	55 581
23	0 6200	0 02558	0 17102	-0 42233	55 197
24	0 6500	0 02569	0 23715	-0 51688	54 868
25	0 6800	0 02568	0 30329	-0 61038	54 588
26	0 7100	0 02554	0 36943	-0 70297	54 339
27	0 7400	0 02520	0 43557	-0 79477	54 123
28	0 7700	0 02461	0 50170	-0 88590	53 947
29	0 8000	0 02370	0 56784	-0 97651	53 799
30	0 8300	0 02242	0 63398	-1 06663	53 655
31	0 8600	0 02070	0 70011	-1 15629	53 525
32	0 8900	0 01851	0 76625	-1 24560	53 438
33	0 9200	0 01580	0 83239	-1 33470	53 399
34	0 9500	0 01242	0 89853	-1 42376	53 414
35	0 9750	0 00899	0 95364	-1 49804	53 424
36	1 0000	0 00523	1 00875	-1 57224	53 356

CHORD 3 9874 STAGGER 56 435 CAMBER 1 959

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0 00495	-1 19582	1 75031	-1 19582	1 75031
2	0 00495	-1 20007	1 74343	-1 18745	1 75176
3	0 00495	-1 19850	1 73645	-1 18152	1 74738
4	0 00604	-1 15067	1 66315	-1 13074	1 67670
5	0 00715	-1 09744	1 58027	-1 07374	1 59612
6	0 00827	-1 04426	1 49601	-1 01669	1 51412
7	0 00940	-0 99110	1 41033	-0 95962	1 43069
8	0 01053	-0 93796	1 32331	-0 90253	1 34587
9	0 01167	-0 88484	1 23500	-0 84543	1 25971
10	0 01279	-0 83172	1 14538	-0 78832	1 17218
11	0 01391	-0 77860	1 05443	-0 73121	1 08325
12	0 01523	-0 71484	0 94356	-0 66270	0 97473
13	0 01653	-0 65101	0 83099	-0 59425	0 86447
14	0 01777	-0 58707	0 71724	-0 52591	0 75305

PHASE IV ROTOR

7PC

COORD SYSTEM ORIGIN Z -7 03590 R O MU O. ETA O

SECTION NO 2 SECTION BB RHO 8 0000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER	UPSILON	LOWER	UPSILON
				ALPHA		
15	0 01896	-0.52299	0.60296	-0.45772	0.64113	0.52956
16	0 02007	-0.45871	0.48896	-0.38973	0.52956	0.41908
17	0 02110	-0.39421	0.37601	-0.32195	0.41908	0.31031
18	0 02202	-0.32948	0.26474	-0.25441	0.31031	0.20368
19	0 02285	-0.26452	0.15568	-0.18709	0.20368	0.09928
20	0 02356	-0.19935	0.04899	-0.11998	0.09928	-0.00289
21	0 02417	-0.13398	-0.05529	-0.05308	-0.00289	-0.10301
22	0 02468	-0.06844	-0.15728	0.01365	-0.10301	-0.20126
23	0 02508	-0.00273	-0.25715	0.08021	-0.20126	-0.29791
24	0 02538	0.06313	-0.35512	0.14663	-0.29791	-0.39321
25	0 02558	0.12913	-0.45144	0.21290	-0.39321	-0.48741
26	0 02569	0.19527	-0.54635	0.27903	-0.48741	-0.58071
27	0 02568	0.26156	-0.64005	0.34503	-0.58071	-0.67328
28	0 02554	0.32806	-0.73265	0.41080	-0.67328	-0.76532
29	0 02520	0.39485	-0.82421	0.47628	-0.76532	-0.85703
30	0 02461	0.46204	-0.91478	0.54137	-0.85703	-0.94860
31	0 02370	0.52971	-1.00442	0.60597	-0.94860	-1.04014
32	0 02242	0.59797	-1.09312	0.66998	-1.04014	-1.13176
33	0 02070	0.66693	-1.18083	0.73330	-1.13176	-1.22362
34	0 01851	0.73661	-1.26758	0.79589	-1.22362	-1.31592
35	0 01580	0.80710	-1.35348	0.85768	-1.31592	-1.40900
36	0 01242	0.87865	-1.43852	0.91841	-1.40900	-1.48736
37	0 00899	0.93925	-1.50872	0.96803	-1.48736	-1.55718
38	0 00523	0.99351	-1.57064	1.01161	-1.55718	-1.56461
39	0 00523	1.00015	-1.57433	1.01323	-1.56461	-1.57224
40	0 00523	1.00875	-1.57224	1.00875	-1.57224	
LE RAD	0 01010	CENTER AT ALPHA	-1.19007	UPSILON	1.74200	
TE RAD	0 01132	CENTER AT ALPHA	1.00200	UPSILON	-1.56316	

•7PC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN	Z	-7.03590	R	O.	MU	O	ETA	O.
STAGE	4	ROTOR						
						NB	20	
SECTION NO	2	SECTION	BB			RHO	8.0000	
CHORD	3 9874	STAGGER	56 435			CAMBER	1.959	
AREA	0.295909	SURFACE	ARC LENGTH	8.00639				
SECTION C.G.		ALPHA		UPSILON				
STREAMSURFACE	SECTION C.G.	-0.01777		-0.09947				
BLADE AXIS		-0.02237		-0.08965				
STACKING AXIS (RADIAL)		-0.02237		-0.08965				
		-0.00220		O				

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7 03590 R 0. MU 0 ETA 0.
 SECTION NO 3 SECTION CC RHO 7.5000

MEANLINE INPUT DATA

PT	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.29977	53.704	0.02050	1.71005
2	-1.24306	54.072	0.02552	1.63218
3	-1.12816	54.745	0.03589	1.47150
4	1.01149	55.375	0.04659	1.30444
5	-0.89319	55.999	0.05752	1.13101
6	0.76116	56.629	0.06955	0.93277
7	0.61525	56.803	0.08225	0.70963
8	-0.46739	55.878	0.09381	0.48686
9	0.31820	54.216	0.10356	0.27310
10	-0.16821	52.502	0.11119	0.07147
11	-0.01775	51.044	0.11666	-0.11939
12	0.13277	49.950	0.11997	-0.30176
13	0.28288	49.203	0.12106	-0.47792
14	0.43250	48.656	0.11959	-0.64944
15	0.58129	48.173	0.11389	-0.81693
16	0.72879	47.796	0.10212	-0.98062
17	0.87499	47.535	0.08260	-1.14084
18	1.01950	47.340	0.05380	-1.29808
19	1.13848	47.197	0.02162	-1.42698

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PC1	AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0	0.00516	-1.29977	1.71005	53.704
2	0	0.0250	0.00552	-1.23882	1.62631	54.144
3	0	0.0500	0.00790	-1.17786	1.54146	54.473
4	0	0.0750	0.00929	-1.11690	1.45555	54.811
5	0	0.1000	0.01070	-1.05595	1.36856	55.147
6	0	0.1250	0.01211	-0.99499	1.28049	55.476
7	0	0.1500	0.01353	-0.93404	1.19134	55.796
8	0	0.1750	0.01494	-0.87308	1.10113	56.109
9	0	0.2000	0.01634	-0.81212	1.00986	56.412
10	0	0.2300	0.01800	-0.73897	0.89898	56.749
11	0	0.2600	0.01962	-0.66583	0.78706	56.873
12	0	0.2900	0.02117	-0.59268	0.67518	56.725
13	0	0.3200	0.02263	-0.51953	0.56448	56.322
14	0	0.3500	0.02399	-0.44638	0.45598	55.663
15	0	0.3800	0.02522	-0.37324	0.35043	54.871
16	0	0.4100	0.02633	-0.30009	0.24807	54.011
17	0	0.4400	0.02730	-0.22694	0.14893	53.154

•ZPC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O ETA O.
STAGE 4 ROTOR NB 20

SECTION NO 3 SECTION CC RHO 7.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT	AL	T/C	ALPHA	UPSILON	ZETA*
18	0	4700	0.02814	-0.15379	0.05274	52.351
19	0	5000	0.02885	-0.08065	-0.04081	51.614
20	0	5300	0.02944	-0.00750	-0.13204	50.955
21	0	5600	0.02989	0.06565	-0.22130	50.388
22	0	5900	0.03022	0.13880	-0.30893	49.925
23	0	6200	0.03041	0.21194	-0.39526	49.536
24	0	6500	0.03047	0.28509	-0.48049	49.193
25	0	6800	0.03039	0.35824	-0.56475	48.891
26	0	7100	0.03011	0.43139	-0.64817	48.623
27	0	7400	0.02957	0.50453	-0.73086	48.387
28	0	7700	0.02872	0.57768	-0.81290	48.180
29	0	8000	0.02749	0.65083	-0.89438	47.989
30	0	8300	0.02583	0.72398	-0.97531	47.794
31	0	8600	0.02367	0.79712	-1.05571	47.620
32	0	8900	0.02098	0.87027	-1.13569	47.498
33	0	9200	0.01772	0.94342	-1.21539	47.416
34	0	9500	0.01372	1.01657	-1.29490	47.358
35	0	9750	0.00975	1.07752	-1.36103	47.300
36	1	0000	0.00544	1.13848	-1.42698	47.197

CHORD 3.9732 STAGGER 52.144 CAMBER 6.507

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	I/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0	00516	-1.29977	-1.29977	1.71005
2	0	00516	-1.30401	-1.29144	1.71186
3	0	00516	-1.30220	-1.28523	1.70799
4	0	00652	-1.24931	-1.22832	1.63390
5	0	00790	-1.19063	-1.16509	1.55057
6	0	00929	-1.13199	-1.10182	1.46619
7	0	01070	-1.07339	-1.03851	1.38070
8	0	01211	-1.01481	-0.97517	1.29412
9	0	01353	-0.95626	-0.91181	1.20645
10	0	01494	-0.89772	-0.84844	1.11768
11	0	01634	-0.83917	-0.78507	1.02782
12	0	01800	-0.76888	-0.70906	0.91859
13	0	01962	-0.69847	-0.63318	0.80836
14	0	02117	-0.62784	-0.55752	0.69826

PHASE IV ROTOR

•ZPC•

COORD SYSTEM ORIGIN Z -7.03590 R O MU O. ETA O.
 SECTION NO 3 SECTION CC RHO 7.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	I/C	UPPER ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0 02263	-0.55695	0.53955	-0.48212	0.58942
16	0 02399	-0.48573	0.42911	-0.40734	0.48286
17	0 02522	-0.41422	0.32161	-0.33226	0.37926
18	0 02633	-0.34241	0.21733	-0.25777	0.27880
19	0 02730	-0.27034	0.11640	-0.18354	0.18145
20	0 02814	-0.19806	0.01859	-0.10953	0.08689
21	0 02885	-0.12558	-0.07640	-0.03572	-0.00522
22	0 02944	-0.05292	-0.16888	0.03792	-0.09521
23	0 02989	0.01990	-0.25916	0.11139	-0.18344
24	0 03022	0.09286	-0.34757	0.18473	-0.27029
25	0 03041	0.16598	-0.43447	0.25790	-0.35606
26	0 03047	0.23927	-0.52004	0.33091	-0.44093
27	0 03039	0.31276	-0.60444	0.40372	-0.52506
28	0 03011	0.38651	-0.68771	0.47627	-0.60864
29	0 02957	0.46062	-0.76987	0.54845	-0.69185
30	0 02872	0.53517	-0.85094	0.62020	-0.77486
31	0 02749	0.61025	-0.93093	0.69141	-0.85783
32	0 02583	0.68597	-1.00978	0.76198	-0.94085
33	0 02367	0.76239	-1.08740	0.83186	-1.02402
34	0 02098	0.83954	-1.16385	0.90100	-1.10753
35	0 01772	0.91750	-1.23921	0.96934	-1.19157
36	0 01372	0.99652	-1.31336	1.03662	-1.27643
37	0 00975	1.06329	-1.37416	1.09175	-1.34790
38	0 00544	1.12247	-1.42714	1.13987	-1.41103
39	0 00544	1.12978	-1.43013	1.14229	-1.41857
40	0 00544	1.13848	-1.42698	1.13848	-1.42698
LF RAD	0 01052	CENTER AT ALPHA	-1.29356	UPSILON	1.70156
IE RAC	0 01191	CENTER AT ALPHA	1.13039	UPSILON	-1.41824

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PHASE IV ROTOR

COORD SYSTEM ORIGIN	Z	-7 03590	R	O	MU	O	NR	O	ETA	O
SECTION NO	3	SECTION CC				RHO		7.5000		
CHORD	3 9732	STAGGER				CAMBER		6.507		
ARFA	O 341989	SURFACE ARC LENGTH				7.98916				
SECTION C G		ALPHA				UPSILON				
STREAMSURFACE SECTION C G.		-O.01298				-O.06823				
BLADE AXIS		-O.02284				-O.05934				
STACKING AXIS (RADIAL)		-O.02284				-O.05934				
		-O.00220				O				

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7 03590 R O. MU O FTA O
STAGE 4 ROTOR NR 20
SECTION NO 4 SECTION DO RIIO 7 0000

MEANLINE INPUT DATA

PT	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.38977	52 277	0.02080	1.64184
2	-1.32847	52 588	0.02735	1.56212
3	1 20452	53 201	0.04104	1.39838
4	1 07890	53.820	0.05536	1.22869
5	0 95175	54 323	0.07008	1.05322
6	0 81016	54 471	0.08631	0.85511
7	0 65366	53.798	0.10330	0.63796
8	-0.49548	52 014	0.11855	0.42803
9	-0.33582	49 813	0.13135	0.23157
10	0 17518	48 054	0.14142	0.04739
11	0 01389	46.675	0.14862	-0.12769
12	0 14763	45 500	0.15280	-0.29553
13	0 30939	44 461	0.15387	-0.45710
14	0 47104	43.552	0.15096	-0.61317
15	0 63226	42.784	0.14213	-0.76439
16	0 79307	42.135	0.12555	-0.91140
17	0 95320	41 587	0.09952	-1.05481
18	1 11256	41.122	0.06241	-1 19491
19	1 24453	40.782	0.02179	-1 30952

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PC* AI	T/C	ALPHA	UPSILON	ZETA*
1	0	00526	-1 38977	1.64184	52 277
2	0 0250	0 00704	-1.32391	1.55616	52 609
3	0 0500	0 00886	-1 25805	1.46953	52 912
4	0 0750	0 01073	-1.19220	1.38190	53 235
5	0 1000	0 01262	-1.12634	1.29322	53 562
6	0 1250	0 01453	-1 06048	1.20349	53.883
7	0 1500	0 01646	-0 99462	1.11276	54.162
8	0 1750	0 01839	-0 92877	1.02118	54.383
9	0 2000	0 02030	-0.86291	0.92903	54 487
10	0 2300	0 02256	-0 78388	0.81833	54 433
11	0 2600	0 02475	-0 70485	0.70833	54 130
12	0 2900	0 02683	-0 62582	0.60009	53 554
13	0 3200	0 02878	-0 54679	0.49452	52 714
14	0 3500	0 03058	-0.46776	0.39280	51 613
15	0 3800	0 03221	-0.38874	0.29500	50.513
16	0 4100	0 03366	-0 30971	0.20081	49.506
17	0 4400	0 03495	-0.23068	0.10974	48.610

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O

SECTION NO 4 SECTION DD RHO 7.0000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
18	0 4700	0 03606	-0 15165	0 02131	47.836
19	0 5000	0 03699	-0 07262	-0 06490	47.149
20	0 5300	0 03774	0 00641	-0 14917	46.538
21	0 5600	0 03831	0 08544	-0 23172	45.958
22	0 5900	0 03869	0 16447	-0 31263	45.392
23	0 6200	0 03889	0 24350	-0 39200	44.860
24	0 6500	0 03888	0 32352	-0 46997	44.374
25	0 6800	0 03863	0 40155	-0 54668	43.926
26	0 7100	0 03808	0 48058	-0 62224	43.513
27	0 7400	0 03715	0 55961	-0 69676	43.122
28	0 7700	0 03580	0 63864	-0 77028	42.745
29	0 8000	0 03398	0 71767	-0 84288	42.404
30	0 8300	0 03161	0 79670	-0 91467	42.113
31	0 8600	0 02866	0 87573	-0 98578	41.841
32	0 8900	0 02508	0 95476	-1 05619	41.558
33	0 9200	0 02084	1 03378	1 12593	41.306
34	0 9500	0 01576	1 11281	-1 19514	41.125
35	0 9750	0 01081	1 17867	1 25250	40.979
36	1 0000	0 00551	1 24453	-1 30952	40.782

CHORD 3 9560 STAGGER 48.249 CAMBER 11.495

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPSILON	UPPER ALPHA	LOWER ALPHA	UPSILON
1	0 00526	-1 38977	1 64184	-1 38977	1 64184	1 64184
2	0 00526	-1 39390	1 63431	-1 38135	1 64392	1 64392
3	0 00526	-1 39191	1 62705	-1 37492	1 64017	1 64017
4	0 00704	-1 33497	1 54771	-1 31285	1 56461	1 56461
5	0 00886	-1 27204	1 45895	-1 24407	1 48010	1 48010
6	0 01073	-1 20919	1 36920	-1 17520	1 39460	1 39460
7	0 01262	-1 14642	1 27840	-1 10626	1 30805	1 30805
8	0 01453	-1 03370	1 18655	-1 07126	1 22043	1 22043
9	0 01646	-1 02101	1 09370	-0 96823	1 13182	1 13182
10	0 01839	-0 95833	1 00000	-0 89920	1 04236	1 04236
11	0 02030	-0 89560	0 90571	-0 83022	0 95236	0 95236
12	0 02256	-0 82018	0 79237	-0 74758	0 84429	0 84429
13	0 02475	-0 74452	0 67965	0 66518	0 73702	0 73702
14	0 02683	-0 66851	0 56857	-0 58313	0 63162	0 63162

PHASE IV ROTOR

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(COORD SYSTEM ORIGIN Z -7 03590 R O MU O. ETA O
SECTION NO 4 SECTION DD RHO 7.0000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	I/C	UPPER ALPHA	UPPER UPSILON	LOWER ALPHA	LOWER UPSILON
15	0 02878	-0 59209	0 46013	-0 50150	0 52910
16	0 03058	-0 51517	0 35524	-0 42035	0 43036
17	0 03221	-0 43790	0 25449	-0 33957	0 33551
18	0 03366	-0 36035	0 15757	-0 25907	0 24405
19	0 03495	-0 28254	0 06403	-0 17881	0 15545
20	0 03606	-0 20452	-0 02657	-0 09878	0 06919
21	0 03699	-0 12626	-0 11466	0 01897	-0 01514
22	0 03774	0 04778	-0 20052	0 06060	-0 09782
23	0 03831	0 03097	-0 28439	0 13991	-0 17904
24	0 03864	0 10998	-0 36637	0 21895	-0 25888
25	0 03889	0 18924	-0 44652	0 29775	-0 33747
26	0 03888	0 26874	-0 52494	0 37631	-0 41499
27	0 03863	0 34855	-0 60171	0 45456	-0 49164
28	0 03808	0 42873	-0 67686	0 53244	-0 56762
29	0 03715	0 50938	-0 75039	0 60984	-0 64312
30	0 03580	0 59057	-0 82229	0 68671	-0 71828
31	0 03398	0 67235	-0 89250	0 76299	-0 79325
32	0 03161	0 75476	-0 96106	0 83863	-0 86828
33	0 02866	0 83792	-1 02800	0 91354	-0 94355
34	0 02508	0 92185	-1 09331	0 98767	-1 01907
35	0 02084	1 00658	-1 15689	1 06099	-1 09496
36	0 01576	1 09231	-1 21862	1 13331	-1 17166
37	0 01081	1 16464	-1 26865	1 19270	-1 23635
38	0 00551	1 22835	-1 31170	1 24433	-1 29321
39	0 00551	1 23608	-1 31375	1 24749	-1 30061
40	0 00551	1 24453	-1 30952	1 24453	-1 30952
IF RAD	0 01074	CENTER AT ALPHA	-1 38320	UPSILON	1 63334
IF RAD	0 01231	CENTER AT ALPHA	1 23521	UPSILON	-1 30147

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PHASE IV ROTOR

COORD SYSTEM ORIGIN	Z	-7.03590	R	O	MU	O.	NB	20	ETA	O
SECTION NO	4	SECTION DD				RHO	7	0000		
CHORD	3 9560	STAGGER				CAMBER	11	495		
AREA	O 421805	SURFACE ARC LENGTH				7.97273				
SECTION C G		ALPHA				UPSILON				
STREAMSURFACE SECTION C.G.		-0.01015				-0.06977				
BLADE AXIS		-0.03057				-0.05563				
STACKING AXIS (RADIAL)		-0.03057				-0.05563				
		-0.00220				O.				

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R 0. MU 0. ETA 0.
 SECTION NO 5 SECTION EE RHO 6.5000

MEANLINE INPUT DATA

PI	ALPHA	ZE1A*	THICKNESS	UPSILON
1	-1.46674	51.224	0.02071	1.55182
2	1.40169	51.558	0.02964	1.47024
3	1.27038	52.150	0.04834	1.30280
4	1.13742	52.516	0.06786	1.13037
5	1.00295	52.504	0.08773	0.95476
6	0.85328	51.922	0.10931	0.76130
7	-0.68807	50.494	0.13150	0.55527
8	-0.52115	48.191	0.15126	0.36050
9	-0.35290	45.688	0.16787	0.18062
10	-0.18362	43.720	0.18104	0.01342
11	0.01355	42.070	0.19065	-0.14443
12	0.15706	40.560	0.19641	-0.29431
13	0.32817	39.242	0.19796	-0.43726
14	0.49962	38.091	0.19386	-0.57440
15	0.67124	37.045	0.18192	-0.70651
16	0.84292	36.042	0.15992	-0.83402
17	1.01468	35.033	0.12568	-0.95695
18	1.18656	33.976	0.07674	-1.07538
19	1.32985	33.042	0.02275	-1.17073

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PI	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0.00531	1.46674	1.55182	51.224
2	0.0250	0.00777	-1.39683	1.46410	51.633
3	0.0500	0.01030	-1.32691	1.37529	51.938
4	0.0750	0.01288	-1.25700	1.28555	52.208
5	0.1000	0.01551	-1.18708	1.19503	52.417
6	0.1250	0.01815	-1.11717	1.10395	52.552
7	0.1500	0.02081	1.04726	1.01259	52.571
8	0.1750	0.02344	-0.97734	0.92139	52.458
9	0.2000	0.02604	-0.90743	0.83078	52.210
10	0.2300	0.02907	-0.82353	0.72346	51.725
11	0.2600	0.03198	-0.73963	0.61839	51.022
12	0.2900	0.03473	-0.65573	0.51634	50.088
13	0.3200	0.03730	-0.57183	0.41796	48.962
14	0.3500	0.03966	-0.48794	0.32372	47.662
15	0.3800	0.04181	-0.40404	0.23366	46.403
16	0.4100	0.04373	-0.32014	0.14732	45.259
17	0.4400	0.04543	-0.23624	0.06417	44.248

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7 03590 R O. MU O. ETA O
SECTION NO 5 SECTION EE RHO 6.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCI AL	T/C	ALPHA	UPSILON	ZE1A•
18	0 4700	0 04691	-0.15235	-0.01630	43.380
19	0 5000	0 04816	-0 06845	-0 09446	42.569
20	0 5300	0 04917	0 01545	-0.17048	41.792
21	0 5600	0 04994	0 09935	-0.24449	41.048
22	0 5900	0 05046	0 18324	-0.31663	40.340
23	0 6200	0 05072	0 26714	-0.38704	39.680
24	0 6500	0 05067	0 35104	-0.45589	39.072
25	0 6800	0 05027	0 43494	-0.52331	38.508
26	0 7100	0 04944	0 51884	-0.58943	37.982
27	0 7400	0 04811	0 60273	-0.65435	37.482
28	0 7700	0 04622	0 68663	-0.71813	37.003
29	0 8000	0 04371	0 77053	-0.78081	36.525
30	0 8300	0 04049	0 85443	-0.84240	36.036
31	0 8600	0 03651	0 93832	-0.90288	35.535
32	0 8900	0 03174	1 02222	-0.96223	35.019
33	0 9200	0 02610	1 10612	-1.02048	34.528
34	0 9500	0 01936	1 19002	-1.07772	34.094
35	0 9750	0 01282	1 25993	-1.12469	33.658
36	1 0000	0 00583	1 32985	-1.17073	33.042

CHORD 3 9030 STAGGER 44 231 CAMBER 18.182

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	I/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0 00531	-1 46674	1.55182	-1.46674	1.55182
2	0 00531	-1.47076	1.54423	-1.45836	1.55407
3	0 00531	-1.46870	1.53700	-1.45185	1.55049
4	0 00777	-1.40871	1.45469	-1.38495	1.47350
5	0 01030	-1 34273	1 36290	-1 31110	1.38767
6	0 01288	-1.27687	1.27015	-1.23713	1.30096
7	0 01551	-1.21107	1.17658	-1.16310	1.21349
8	0 01815	-1.14530	1 08240	-1 08904	1 12549
9	0 02081	-1.07950	0.98791	-1.01501	1 03727
10	0 02344	-1.01361	0.89352	-0.94107	0.94926
11	0 02604	-0.94758	0 79965	-0.86727	0.86192
12	0 02907	-0.86806	0 68832	-0.77899	0.75860
13	0 03198	-0.78814	0 57913	-0.69112	0.65764
14	0 03473	-0.70772	0 47285	-0.60374	0.55983

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7 03590 R O. MU O ETA O
STAGE 4 ROTOR NB 20
SECTION NO 5 SECTION EE RHO 6.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	UPPER		LOWER	
		ALPHA	UPSILON	ALPHA	UPSILON
15	0 03730	-0 62674	0 37017	-0.51693	0.46575
16	0 03966	-0 54515	0 27158	-0.43072	0 37585
17	0 04181	-0 46313	0 17740	-0.34495	0 28993
18	0 04373	-0 38076	0 08724	-0 25952	0 20740
19	0 04543	-0 29811	0 00066	-0.17438	0 12768
20	0 04691	-0 21522	-0 08283	-0.08947	0 05024
21	0 04816	-0 13202	-0 16367	-0.00487	-0.02525
22	0 04917	-0 04850	-0 24202	-0.07939	-0.09894
23	0 04994	0 03535	-0 31798	0.16334	-0.17099
24	0 05046	0 11950	-0 39168	0 24699	-0 24157
25	0 05072	0 20395	-0 46322	0 33034	-0 31087
26	0 05067	0 28871	-0 53266	0 41337	-0 37912
27	0 05027	0 37385	-0 60008	0 49602	-0 44655
28	0 04944	0 45946	-0 66548	0 57821	-0 51339
29	0 04811	0 54560	-0 72885	0 65986	-0 57985
30	0 04622	0 63234	-0 79016	0 74092	-0 64609
31	0 04371	0 71977	-0 84935	0 82129	-0 71227
32	0 04049	0 80794	-0 90629	0 90091	-0 77850
33	0 03651	0 89691	-0 96086	0 97973	-0 84490
34	0 03174	0 98668	-1 01296	1 05776	-0 91151
35	0 02610	1 07725	-1 06244	1 13499	-0 97851
36	0 01936	1 16884	-1 10901	1 21119	-1 04643
37	0 01282	1 24606	-1 14552	1 27380	-1 10386
38	0 00583	1 31320	-1 17568	1 32769	-1 15352
39	0 00583	1 32153	-1 17649	1 33181	-1 16100
40	0 00583	1 32985	-1 17073	1 32985	-1 17073
LE RAD	0 01080	CENTER AT ALPHA	-1 45999	UPSILON	1 54339
TE RAD	0 01342	CENTER AT ALPHA	1 31861	UPSILON	-1 16340

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R 0. MU 0 NB 0 ETA 0

SECTION NO 5 SECTION EE RHO 6.5000

CHORD STAGGER CAMBER
3 9030 44 231 18.182

AREA 0 526004 SURFACE ARC LENGTH 7.89775

SECTION C G.	ALPHA	UPSILON
STREAMSURFACE SECTION C G	-0.00786	-0.08023
BLADE AXIS	-0.04051	-0.06741
STACKING AXIS (RADIAL)	-0.04051	-0.06741
	-0.00220	0

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O ETA O.
SECTION NO 6 SECTION FF RHO 6.0000

MEANLINE INPUT DATA

PT	ALPHA	ZETA	THICKNESS	UPSILON
1	1 53244	50.428	0.01988	1 44710
2	1 46403	50.665	0 03161	1.36406
3	1 32610	50.942	0 05597	1.19482
4	1 18650	50 835	0.08096	1.02304
5	1 04552	50 228	0 10596	0.85148
6	0 88870	48.786	0 13247	0 66725
7	-0 71590	46.201	0 15907	0.47809
8	0 54154	43 076	0 18233	0 30579
9	-0 36592	40 239	0 20175	0 14987
10	0 18930	38.050	0 21713	0.00634
11	0 01175	36.205	0 22823	-0.12789
12	0 16653	34 470	0 23468	-0.25411
13	0 34554	32 718	0.23581	-0.37277
14	0 52524	30 963	0 22976	-0.48391
15	0 70542	29.262	0 21424	-0.58788
16	0 88636	27 509	0 18695	-0.68507
17	1 06803	25.575	0.14545	-0.77522
18	1 25087	23.426	0.08091	0.85780
19	1 40417	21.413	0.02288	-0.92057

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCI AL	T/C	ALPHA	UPSILON	ZETA
1	0	0.00527	-1.53244	1.44710	50.428
2	0 0250	0 00861	-1.45903	1.35796	50.649
3	0 0500	0.01203	-1.38561	1.26805	50.862
4	0 0750	0.01550	-1.31219	1 17769	50.929
5	0 1000	0.01898	-1.23878	1.08729	50.895
6	0 1250	0 02246	-1.16536	0.99713	50.778
7	0 1500	0 02593	-1.09195	0.90757	50.509
8	0 1750	0.02933	-1 01853	0 81914	50.058
9	0 2000	0.03265	-0 94512	0.73240	49.417
10	0 2250	0 03647	-0.85702	0.63133	48.382
11	0 2500	0 04010	-0.76892	0.53429	47.102
12	0 2750	0 04349	-0.68082	0.44190	45.585
13	0 3000	0 04663	-0.59273	0 35442	44.000
14	0 3250	0.04951	-0 50463	0.27168	42.412
15	0 3500	0.05211	-0 41653	0.19324	40.971
16	0 4100	0.05444	0 32843	0 11844	39.727
17	0 4400	0.05650	-0.24033	0.04668	38.618

ZPC

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 SECTION NO 6 SECTION FF RHO 6.0000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
18	0 4700	0 05827	0 15223	-0 02244	37 629
19	0 5000	0 05976	-0 06414	0 08922	36 702
20	0 5300	0 06095	0 02396	-0 15384	35 820
21	0 5600	0 06183	0 11206	-0 21642	34 954
22	0 5900	0 06239	0 20016	0 27702	34 093
23	0 6200	0 06260	0 28826	0 33568	33 216
24	0 6500	0 06239	0 37636	-0 39239	32 321
25	0 6800	0 06170	0 46445	-0 44718	31 441
26	0 7100	0 06046	0 55255	-0 50014	30 586
27	0 7400	0 05860	0 64065	-0 55134	29 739
28	0 7700	0 05605	0 72875	-0 60081	28 894
29	0 8000	0 05275	0 81685	-0 64858	28 036
30	0 8300	0 04861	0 90495	-0 69464	27 159
31	0 8600	0 04358	0 99304	-0 73895	26 232
32	0 8900	0 03761	1 08114	-0 78143	25 240
33	0 9200	0 03063	1 16924	-0 82199	24 193
34	0 9500	0 02238	1 25734	-0 86057	23 097
35	0 9750	0 01448	1 33075	-0 89120	22 213
36	1 0000	0 00607	1 40417	-0 92057	21 413

CHORD 3 1722 STAGGER 38.878 CAMBER 29.015

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	1/C	ALPHA	UPSILON	UPPER ALPHA	LOWER ALPHA	UPSILON
1	0 00527	-1 53244	1 44710	-1 53244	-1 53244	1 44710
2	0 00527	-1 53622	1 43971	-1 53622	-1 52441	1 44942
3	0 00527	-1 53418	1 43277	-1 53418	-1 51804	1 44613
4	0 00861	-1 47158	1 34766	-1 47158	-1 44647	1 36826
5	0 01203	-1 40321	1 25373	-1 40321	-1 36801	1 28236
6	0 01550	-1 33489	1 15927	-1 33489	-1 28950	1 19611
7	0 01898	-1 26656	1 06471	-1 26656	-1 21100	1 10987
8	0 02246	-1 19819	0 97034	-1 19819	-1 13254	1 02392
9	0 02593	-1 12969	0 87647	-1 12969	-1 05421	0 93867
10	0 02933	-1 06095	0 78362	-1 06095	-0 97612	0 85466
11	0 03265	-0 99188	0 69235	-0 99188	-0 89836	0 77246
12	0 03647	-0 90845	0 58564	-0 90845	-0 80559	0 67701
13	0 04010	-0 82432	0 48281	-0 82432	-0 71352	0 58577
14	0 04349	-0 73942	0 38449	-0 73942	-0 62223	0 49931

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R O. MUJ O. ETA O.

SECTION NO 6 SECTION FF RHO 6.0000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER	UPSILGN	LOWER ALPHA	UPSILON
15	0 04663	-0.65382		0.29115	-0.53163	0.41769
16	0 04951	-0.56760		0.20274	-0.44.65	0.34062
17	0 05211	-0.48097		0.11903	-0.35208	0.26746
18	0 05444	-0.39406		0.03946	-0.26280	0.19741
19	0 05650	-0.30684		-0.03658	-0.17383	0.12994
20	0 05877	-0.21934		-0.10948	-0.08513	0.06460
21	0 05976	-0.13150		-0.17959	0.00323	0.00115
22	0 06095	-0.04331		-0.24705	0.09124	-0.06063
23	0 06183	0.04525		-0.31199	0.17887	-0.12084
24	0 06239	0.13420		-0.37446	0.26612	-0.17957
25	0 06260	0.22358		-0.43445	0.35293	-0.23691
26	0 06239	0.31344		-0.49183	0.43927	-0.29295
27	0 06170	0.40376		-0.54647	0.52516	-0.34789
28	0 06046	0.49453		-0.59831	0.61058	-0.40197
29	0 05860	0.58583		-0.64731	0.69547	-0.45537
30	0 05605	0.67767		-0.69337	0.77983	-0.50826
31	0 05275	0.77008		-0.73640	0.86361	-0.56076
32	0 04861	0.86309		-0.77622	0.94680	-0.61306
33	0 04358	0.95672		-0.81267	1.02937	-0.66523
34	0 03761	1.05089		-0.84559	1.11139	-0.71726
35	0 03063	1.14556		-0.87469	1.19292	-0.76929
36	0 02238	1.24078		-0.89940	1.27390	-0.82174
37	0 01448	1.32043		-0.91648	1.34108	-0.86592
38	0 00607	1.38869		-0.92924	1.39877	-0.90370
39	0 00607	1.39704		-0.92815	1.40424	-0.91050
40	0 00607	1.40417		-0.92057	1.40417	-0.92057
LE RAD	0 01049	CENTER AT ALPHA		-1.52575	UPSILON	1.43901
TE RAD	0 01401	CENTER AT ALPHA		1.39113	UPSILON	-0.91545

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN	Z	-7.03590	R	O.	MU	O.	ETA	O.
STAGE	4	ROTOR		NB		20		
SECTION NO	6	SECTION FF		RHO		6.0000		
CHORD	3.7722	STAGGER		CAMBER		29.015		
AREA	O 603658	SURFACE ARC LENGTH		7.69444				
SECTION C G.		ALPHA		UPSILON				
STREAMSURFACE SECTION C G.		-0.01735		-0.04598				
BLADE AXIS		-0.05233		-0.04683				
STACKING AXIS (RADIAL)		-0.05233		-0.04693				
		-0.00220		O.				

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R 0 MU 0. ETA 0.
 SECTION NO 7 SECTION GG RHO 5.5000

MEANLINE INPUT DATA

PI	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.58134	49.198	0.01886	1.32697
2	-1.50929	49.159	0.03330	1.24339
3	-1.36379	48.916	0.05285	1.07546
4	-1.21657	48.343	0.09273	0.90806
5	1.06765	47.180	0.12223	0.74372
6	0.90221	44.774	0.15311	0.57195
7	0.72034	41.200	0.18362	0.40223
8	0.53719	38.111	0.20994	0.25078
9	0.35315	35.635	0.23168	0.11261
10	0.16844	33.371	0.24842	-0.01484
11	0.01700	31.069	0.25963	-0.13207
12	0.20288	28.776	0.26479	-0.23961
13	0.38944	26.371	0.26304	-0.33779
14	0.57647	23.841	0.25285	-0.42640
15	0.76411	21.098	0.23279	-0.50519
16	0.95229	17.862	0.20120	-0.57319
17	1.14123	13.950	0.15579	-0.62810
18	1.33066	9.261	0.09266	-0.66708
19	1.48886	4.486	0.02178	-0.68490

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PI	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0.00514	-1.58134	1.32697	49.188
2	0.0250	0.00933	-1.50458	1.23793	49.228
3	0.0500	0.01357	-1.42783	1.14914	49.080
4	0.0750	0.01783	-1.35107	1.06087	48.893
5	0.1000	0.02208	-1.27432	0.97330	48.622
6	0.1250	0.02630	-1.19756	0.88673	48.235
7	0.1500	0.03047	-1.12081	0.80157	47.672
8	0.1750	0.03454	-1.04405	0.71838	46.895
9	0.2000	0.03848	-0.96730	0.63777	45.859
10	0.2300	0.04302	0.87519	0.54540	44.238
11	0.2600	0.04728	-0.78308	0.45843	42.463
12	0.2900	0.05126	-0.69098	0.37676	40.654
13	0.3200	0.05492	-0.59887	0.29996	39.033
14	0.3500	0.05826	-0.50677	0.22710	37.696
15	0.3800	0.06128	-0.41466	0.15747	36.489
16	0.4100	0.06397	-0.32255	0.09074	35.360
17	0.4400	0.06631	-0.23045	0.02673	34.228

•ZPC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R 0.0 MU 0.0 ETA 0.0
 SECTION NO 7 SECTION GG RHO 5.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT	AL	T/C	ALPHA	UPSILON	ZETA*
18	0.4700	0.06828	-0.13834	-0.03458	33.068	
19	0.5000	0.06987	-0.04624	-0.09325	31.927	
20	0.5300	0.07106	0.04587	-0.14941	30.821	
21	0.5600	0.07185	0.13797	-0.20316	29.711	
22	0.5900	0.07219	0.23008	-0.25453	28.582	
23	0.6200	0.07208	0.32219	-0.30353	27.430	
24	0.6500	0.07143	0.41429	-0.35014	26.252	
25	0.6800	0.07022	0.50640	-0.39437	25.039	
26	0.7100	0.06839	0.59850	-0.43619	23.789	
27	0.7400	0.06590	0.69061	-0.47556	22.489	
28	0.7700	0.06272	0.78272	-0.51243	21.132	
29	0.8000	0.05877	0.87482	-0.54667	19.611	
30	0.8300	0.05399	0.96693	-0.57795	17.871	
31	0.8600	0.04831	1.05903	-0.60599	15.960	
32	0.8900	0.04168	1.15114	-0.63058	13.906	
33	0.9200	0.03397	1.24325	-0.65141	11.498	
34	0.9500	0.02473	1.33535	-0.66780	8.587	
35	0.9750	0.01567	1.41211	-0.67774	6.264	
36	1.0000	0.00593	1.48886	-0.68490	4.486	

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CHORD 3.6707 STAGGER 33.236 CAMBER 44.703

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0.00514	-1.58134	1.32697	-1.58134	1.32697
2	0.00514	-1.58482	1.31982	-1.57377	1.32936
3	0.00514	-1.58280	1.31329	-1.56759	1.32640
4	0.00933	-1.51755	1.22675	-1.49161	1.24911
5	0.01357	-1.44664	1.13283	-1.40901	1.16545
6	0.01783	-1.37573	1.03936	-1.32642	1.08239
7	0.02208	-1.30473	0.94651	-1.24391	1.00009
8	0.02630	-1.23357	0.85458	-1.16155	0.91888
9	0.03047	-1.16215	0.76392	-1.07947	0.83922
10	0.03454	-1.09033	0.67507	-0.99777	0.76170
11	0.03848	-1.01798	0.58858	-0.91661	0.68696
12	0.04302	-0.93027	0.48884	-0.82011	0.60196
13	0.04728	-0.84167	0.39441	-0.72450	0.52245
14	0.05126	-0.75227	0.30539	-0.62969	0.44813

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 SECTION NO 7 SECTION GG RHD 5.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	UPPER ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0.05492	-0.66235	0.22166	-0.53540	0.37825
16	0.05826	-0.57215	0.14249	-0.44138	0.31171
17	0.06128	-0.48155	0.06704	-0.34777	0.24790
18	0.06397	-0.39050	-0.00500	-0.25461	0.18649
19	0.06631	-0.29890	-0.07389	-0.16200	0.12735
20	0.06828	-0.20672	-0.13960	-0.06997	0.07044
21	0.06987	-0.11405	-0.20208	0.02158	0.01559
22	0.07106	-0.02095	-0.26141	0.11269	-0.03741
23	0.07185	0.07262	-0.31769	0.20333	-0.08864
24	0.07219	0.16669	-0.37089	0.29347	-0.13818
25	0.07208	0.26125	-0.42094	0.38312	-0.18611
26	0.07143	0.35630	-0.46772	0.47228	-0.23256
27	0.07022	0.45185	-0.51113	0.56094	-0.27761
28	0.06839	0.54788	-0.55104	0.64913	-0.32133
29	0.06590	0.64434	-0.58731	0.73688	-0.36380
30	0.06272	0.74122	-0.61979	0.82421	-0.40507
31	0.05877	0.83862	-0.64828	0.91103	-0.44506
32	0.05399	0.93652	-0.67227	0.99734	-0.48364
33	0.04831	1.03465	-0.69123	1.08341	-0.52074
34	0.04168	1.13275	-0.70484	1.16953	-0.55632
35	0.03397	1.23082	-0.71251	1.25568	-0.59031
36	0.02473	1.32858	-0.71267	1.34213	-0.62292
37	0.01567	1.40897	-0.70633	1.41525	-0.64915
38	0.00593	1.47719	-0.69742	1.47938	-0.67071
39	0.00593	1.48429	-0.69409	1.48631	-0.67575
40	0.00593	1.48886	-0.68490	1.48886	-0.68490
LE RAD	0.01006	CENTER AT ALPHA	-1.57477	UPSILON	1.31935
TE RAD	0.01376	CENTER AT ALPHA	1.47514	UPSILON	-0.68380

PHASE IV ROTOR

•ZPC•

COORD SYSTEM ORIGIN	Z	-7	03590	R	O.	MU	O.	ETA	O.
STAGE	4.	ROTOR				NB	20		
SECTION NO	7	SECTION		GG		RHO	5.5000		
CHORD	3	6707	STAGGER			CAMBER	24.703		
AREA	0.664510	SURFACE		ARC LENGTH	7.57340				
SECTION C.G			ALPHA		UPSILON				
SURFACE			-0.01101		-0.03029				
SECTION C.G.			-0.04546		-0.04074				
BLADE AXIS			-0.04546		-0.04074				
STACKING AXIS (RADIAL)			-0.00220		O.				

•ZPC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R 0. MU 0 ETA 0.
 STAGE 4 ROTOR NB 20
 SECTION NO 8 SECTION HH RH0 5.0000

MEANLINE INPUT DATA

PT	ALPHA	ZETA	THICKNESS	UPSILON
1	-1.58986	47.438	0.01945	1.18771
2	-1.51279	47.239	0.03662	1.10419
3	-1.35779	46.652	0.07140	0.93813
4	-1.20201	45.486	0.10583	0.77571
5	-1.04570	43.465	0.13874	0.62152
6	-0.87345	40.504	0.17193	0.46603
7	0.68560	37.192	0.20362	0.31468
8	0.49773	34.334	0.23023	0.17950
9	-0.31013	31.609	0.25181	0.05778
10	-0.12260	28.714	0.26848	-0.05097
11	0.06465	25.763	0.28037	-0.14689
12	0.25155	22.704	0.28765	-0.23036
13	0.43807	19.276	0.28989	-0.30114
14	0.62375	15.347	0.28490	-0.35799
15	0.80855	10.918	0.26870	-0.39963
16	0.99159	5.938	0.23585	-0.42507
17	1.17168	-0.196	0.18079	-0.43295
18	1.34718	-8.539	0.10219	-0.42002
19	1.48821	-17.733	0.02843	-0.38809

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA
1	0.	0.00562	-1.58986	1.18771	47.438
2	0.0250	0.01058	-1.51291	1.10432	47.189
3	0.0500	0.01557	-1.43596	1.02152	46.990
4	0.0750	0.02057	-1.35901	0.93942	46.696
5	0.1000	0.02553	-1.28206	0.85836	46.248
6	0.1250	0.03041	-1.20510	0.77886	45.580
7	0.1500	0.03518	-1.12815	0.70149	44.694
8	0.1750	0.03980	-1.05120	0.62675	43.595
9	0.2000	0.04423	-0.97425	0.55506	42.330
10	0.2300	0.04927	-0.88191	0.47329	40.694
11	0.2600	0.05399	-0.78956	0.39621	39.010
12	0.2900	0.05836	-0.69722	0.32354	37.409
13	0.3200	0.06237	-0.60488	0.25482	35.911
14	0.3500	0.06603	-0.51254	0.18965	34.533
15	0.3800	0.06933	-0.42020	0.12764	33.219
16	0.4100	0.07229	-0.32785	0.06873	31.840
17	0.4400	0.07491	-0.23551	0.01296	30.407

PHASE IV ROTOR

•ZPC•

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
SECTION NO 8 SECTION HH RHO 5.0000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
18	0.4700	0.07718	-0.14317	-0.03967	28.948
19	0.5000	0.07912	-0.05083	-0.08921	27.471
20	0.5300	0.08073	0.04151	-0.13571	25.983
21	0.5600	0.08201	0.13386	-0.17923	24.474
22	0.5900	0.08298	0.22620	-0.21976	22.914
23	0.6200	0.08361	0.31854	-0.25727	21.282
24	0.6500	0.08385	0.41088	-0.29165	19.526
25	0.6800	0.08361	0.50322	-0.32271	17.636
26	0.7100	0.08278	0.59557	-0.35029	15.592
27	0.7400	0.08121	0.68791	-0.37419	13.402
28	0.7700	0.07870	0.78025	-0.39426	11.101
29	0.8000	0.07502	0.87259	-0.41038	8.681
30	0.8300	0.06996	0.96494	-0.42239	6.110
31	0.8600	0.06326	1.05728	-0.43007	3.342
32	0.8900	0.05465	1.14962	-0.43301	0.246
33	0.9200	0.04393	1.24196	-0.43063	-3.322
34	0.9500	0.03141	1.33430	-0.42183	-7.683
35	0.9750	0.02003	1.41126	-0.40351	-12.143
36	1.0000	0.00822	1.48821	-0.38809	-17.733

CHORD 3.4580
STAGGER 27.110
CAMBER 65.171

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPSILON	UPPER ALPHA	LOWER ALPHA	UPSILON
1	0.00562	-1.58986	1.18771	-1.58986	1.18771	1.18771
2	0.00562	-1.59325	1.18017	-1.58214	1.19045	1.19045
3	0.00562	-1.59099	1.17349	-1.57561	1.18765	1.18765
4	0.01058	-1.52633	1.09188	-1.49949	1.11676	1.11676
5	0.01557	-1.45565	1.00315	-1.41627	1.03988	1.03988
6	0.02057	-1.38489	0.91503	-1.33313	0.96382	0.96382
7	0.02553	-1.31394	0.82784	-1.25017	0.88888	0.88888
8	0.03041	-1.24266	0.74206	-1.16755	0.81566	0.81566
9	0.03518	-1.17093	0.65825	-1.08537	0.74473	0.74473
10	0.03980	-1.09865	0.57691	-1.00375	0.67658	0.67658
11	0.04423	-1.02574	0.49852	-0.92275	0.61159	0.61159
12	0.04927	-0.93745	0.40869	-0.82636	0.53788	0.53788
13	0.05399	-0.84832	0.32368	-0.73081	0.46875	0.46875
14	0.05836	-0.75852	0.24339	-0.63592	0.40369	0.40369

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. EIA O.

SECTION NO 8 SECTION HH RHO 5.0000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	UPPER ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0 06237	-0.66813	0 16748	-0.54163	0.34217
16	0 06603	-0.57725	0 09561	-0.44782	0.28369
17	0 06933	-0.48587	0 02736	-0.35452	0.27793
18	0 07229	-0.39379	-0.03745	-0.26191	0.17491
19	0 07491	-0.30106	-0.09873	-0.16996	0.12466
20	0 07718	-0.20776	-0.15644	-0.07858	0.07710
21	0 07912	-0.11393	-0.21057	0 01227	0.03216
22	0 08073	-0.01963	-0.26117	0 10266	-0.01024
23	0 08201	0 07511	-0.30828	0 19260	-0.05017
24	0 08298	0 17034	-0.35191	0 28206	-0.08762
25	0 08361	0 26607	-0.39197	0 37101	-0.12258
26	0 08385	0 36243	-0.42828	0 45934	-0.15501
27	0 08361	0 45943	-0.46049	0 54702	-0.18494
28	0 08278	0 55710	-0.48816	0 63404	-0.21243
29	0 08121	0 65537	-0.51078	0 72045	-0.23760
30	0 07870	0 75405	-0.52778	0 80645	-0.26074
31	0 07502	0 85301	-0.53861	0 89217	-0.28215
32	0 06956	0 95206	-0.54267	0 97781	-0.30212
33	0 06326	1 05090	-0.53926	1 06365	-0.32088
34	0 05465	1 14921	-0.52750	1 15003	-0.33852
35	0 04393	1 24636	-0.50645	1 23756	0 35480
36	0 03141	1 34156	-0.47565	1 32704	-0.36802
37	0 02003	1 41854	-0.44237	1 40397	-0.37466
38	0 00822	1 48006	-0.40917	1 47007	-0.37519
39	0 00822	1 48673	-0.40230	1 48125	-0.37850
40	0 00822	1 48821	-0.38809	1 48821	-0.38809

IE RAD 0.01048 CENTER AT ALPHA -1.58277 UPSILON 1.17999
 IE RAD 0 01828 CENTER AT ALPHA 1.47074 UPSILON -0.39345

•ZPC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z	-7.03590	R	O.	MU	O.	ETA	O.
STAGE	4.	ROTOR					
						NB	20
SECTION NO	8	SECTION IN				RHO	5.0000
CHORD	3 4580	STAGGER				CAMBER	
		27 110				65 171	
AREA	0.705706	SURFACE ARC LENGTH				7.29278	
SECTION C.G.		ALPHA				UPSILON	
STREAMSURFACE SECTION C.G.		0.01493				-0.02029	
BLADE AXIS		0.00673				-0.05751	
STACKING AXIS (RADIAL)		0.00673				-0.05751	
		-0.00220				O.	

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.

SECTION NO 9 SECTION JJ RHO 4.5000

MEANLINE INPUT DATA

PI	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.55904	45.684	0.02149	1.04128
2	-1.47986	45.418	0.03986	0.96061
3	-1.32167	44.598	0.07583	0.80252
4	-1.16390	42.998	0.11012	0.65153
5	-1.00677	40.578	0.14217	0.51173
6	-0.83464	37.515	0.17451	0.37287
7	-0.64789	34.087	0.20638	0.23879
8	-0.46225	30.638	0.23478	0.12161
9	-0.27798	27.167	0.25967	0.02019
10	-0.09503	23.729	0.28055	-0.06653
11	0.08612	20.361	0.29620	-0.13987
12	0.26532	16.944	0.30404	-0.20065
13	0.44204	13.201	0.30066	-0.24884
14	0.61569	9.236	0.28247	-0.28395
15	0.78529	4.870	0.24912	-0.30584
16	0.94965	-2.031	0.20598	-0.31122
17	1.10733	-13.663	0.15905	-0.29020
18	1.25708	-28.864	0.11106	-0.23075
19	1.37519	-41.889	0.07156	-0.14314

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0.	0.00679	-1.55904	1.04128	45.684
2	0.0250	0.01217	-1.48568	0.96650	45.408
3	0.0500	0.01750	-1.41232	0.89252	45.066
4	0.0750	0.02274	-1.33897	0.81955	44.609
5	0.1000	0.02788	-1.26561	0.74790	44.009
6	0.1250	0.03290	-1.19226	0.67799	43.198
7	0.1500	0.03778	-1.11890	0.61029	42.183
8	0.1750	0.04250	-1.04555	0.54510	41.043
9	0.2000	0.04706	-0.97219	0.48262	39.789
10	0.2300	0.05230	-0.88416	0.41128	38.240
11	0.2600	0.05731	-0.79614	0.34385	36.663
12	0.2900	0.06209	-0.70811	0.28020	35.065
13	0.3200	0.06663	-0.62008	0.22024	33.450
14	0.3500	0.07094	-0.53206	0.16386	31.827
15	0.3800	0.07502	-0.44403	0.11093	30.203
16	0.4100	0.07887	-0.35600	0.06136	28.557
17	0.4400	0.08246	-0.26798	0.01510	26.881

ZPC

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O
 SECTION NO 9 SECTION JJ RHO 4.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT	AL	T/C	ALPHA	UPSILON	ZETA*
18	0.4700	0.08577	-0.17995	-0.02793	25.222	
19	0.5090	0.08876	-0.09192	-0.06789	23.614	
20	0.5300	0.09139	-0.00389	-0.10493	22.026	
21	0.5600	0.09356	0.08413	-0.13913	20.430	
22	0.5900	0.09516	0.17216	-0.17052	18.807	
23	0.6200	0.09606	0.26019	-0.19908	17.134	
24	0.6500	0.09610	0.34821	-0.22476	15.379	
25	0.6800	0.09512	0.43624	-0.24745	13.501	
26	0.7100	0.09294	0.52427	-0.26700	11.537	
27	0.7400	0.08943	0.61229	-0.28339	9.538	
28	0.7700	0.08456	0.70032	-0.29653	7.395	
29	0.8000	0.07850	0.78835	-0.30610	4.975	
30	0.8300	0.07148	0.87637	-0.31140	1.679	
31	0.8600	0.06377	0.96440	-0.31056	-3.013	
32	0.8900	0.05558	1.05243	-0.30132	-9.205	
33	0.9200	0.04699	1.14045	-0.28114	-16.864	
34	0.9500	0.03806	1.22848	-0.24620	-26.637	
35	0.9750	0.03040	1.30184	-0.20198	-35.173	
36	1.0000	0.02262	1.37519	-0.14314	-41.889	

CHORD 3 1643
 STAGGER 21.982
 CAMBER 87.574

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPSILON	UPPER ALPHA	LOWER ALPHA	UPSILON
1	0.00679	-1.55904	1.04128	-1.55904	1.04128	1.04128
2	0.00679	-1.56255	1.03281	-1.55059	1.04459	1.04459
3	0.00679	-1.55986	1.02550	-1.54325	1.04174	1.04174
4	0.01217	-1.49939	0.95298	-1.47197	0.98002	0.98002
5	0.01750	-1.43192	0.87296	-1.39273	0.91207	0.91207
6	0.02274	-1.36424	0.79393	-1.31370	0.84516	0.84516
7	0.02788	-1.29626	0.71617	-1.23497	0.77963	0.77963
8	0.03290	-1.22789	0.64005	-1.15663	0.71593	0.71593
9	0.03778	-1.15903	0.56600	-1.07877	0.65457	0.65457
10	0.04250	-1.08970	0.49439	-1.00140	0.59582	0.59582
11	0.04706	-1.01984	0.42541	-0.92455	0.53983	0.53983
12	0.05230	-0.93538	0.34629	-0.83295	0.47628	0.47628
13	0.05731	-0.85028	0.27111	-0.74199	0.41658	0.41658
14	0.06209	-0.76454	0.19980	-0.65168	0.36060	0.36060

PHASE IV ROTOR

7PC

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. NB 20 ETA O.

SECTION NO 9 SECTION JJ RHO 4.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

P1	T/C	ALPHA	UPPER	UPSILON	LOWEF	UPSILON
					ALPHA	
15	0 06663	-0.67819	0.13228	0.13228	-0.56198	0.30820
16	0 07094	-0.59125	0.06849	0.06849	-0.47587	0.25922
17	0 07502	-0.50374	0.00835	0.00835	-0.38432	0.21351
18	0 07887	-0.41565	-0.04824	-0.04824	-0.29635	0.17096
19	0 08246	-0.32696	-0.10127	-0.10127	-0.20899	0.13146
20	0 08577	-0.23777	-0.15069	-0.15069	-0.12213	0.09483
21	0 08876	-0.14817	-0.19656	-0.19656	-0.03567	0.06079
22	0 09139	-0.05812	-0.23897	-0.23897	0.05033	0.02911
23	0 09356	0.03246	-0.27785	-0.27785	0.13581	-0.00041
24	0 09516	0.12362	-0.31304	-0.31304	0.22070	-0.02799
25	0 09606	0.21541	-0.34431	-0.34431	0.30496	-0.05385
26	0 09610	0.30789	-0.37137	-0.37137	0.38554	-0.07816
27	0 09512	0.40110	-0.39379	-0.39379	0.47158	-0.10112
28	0 09294	0.49486	-0.41107	-0.41107	0.55367	-0.12294
29	0 08943	0.58885	-0.42292	-0.42292	0.63574	-0.14385
30	0 08456	0.68310	-0.42920	-0.42920	0.71754	-0.16385
31	0 07850	0.77758	-0.42983	-0.42983	0.79912	-0.18238
32	0 07148	0.87305	-0.42445	-0.42445	0.87969	-0.19836
33	0 06377	0.96970	-0.41131	-0.41131	0.95910	-0.20981
34	0 05558	1.06649	-0.38812	-0.38812	1.03836	-0.21453
35	0 04699	1.16202	-0.35229	-0.35229	1.11889	-0.21000
36	0 03806	1.25548	-0.30003	-0.30003	1.20148	-0.19236
37	0 03040	1.32954	-0.24130	-0.24130	1.27413	-0.16267
38	0 02262	1.37396	-0.19759	-0.19759	1.32475	-0.13400
39	0 02262	1.38429	-0.17746	-0.17746	1.35231	-0.12977
40	0 02262	1.37519	-0.14314	-0.14314	1.37519	-0.14314
LF RAD	0 01165	CENTER AT ALPHA	-1.55089	UPSILON	1.03294	
TE RAD	0 04070	CENTER AT ALPHA	1.34433	UPSILON	-0.16968	

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z	-7.03590	R	O.	MU	O.	ETA	O.
STAGE	4.	ROTOR					
SECTION NO	9	SECTION JJ		RHO	4.5000		
CHORD	3 1643	STAGGER		CAMBER	87.574		
		21.982					
AREA	0.664729	SURFACE ARC LENGTH	6.87514				
SECTION C.G.		ALPHA	UPSILON				
STREAMSURFACE SECTION C.G.		-0 00726	-0 00142				
BLADE AXIS		0.04647	-0.05830				
STACKING AXIS (RADIAL)		0.04647	-0.05830				
		-0 00220	0.				

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.03590 R 0. MU 0. ETA 0.
 STAGE 4. ROTOR NB 20
 SECTION NO 10 SECTION KK RHO 4.0000

MEANLINE INPUT DATA

PT	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.52196	43.955	0.02405	0.90476
2	-1.44355	43.542	0.04238	0.83013
3	-1.28758	42.372	0.07901	0.68560
4	1.13314	40.460	0.11568	0.54944
5	-0.98019	37.803	0.15225	0.42453
6	0.81355	34.439	0.19136	0.30221
7	0.63364	30.682	0.23115	0.18664
8	-0.45568	27.040	0.26607	0.08797
9	0.27972	23.523	0.29403	0.00436
10	0.10573	20.127	0.31290	-0.06551
11	0.06578	16.981	0.32125	-0.12297
12	0.23439	13.962	0.31919	-0.16941
13	0.39937	10.459	0.30906	-0.20488
14	0.55989	5.764	0.29445	-0.22782
15	0.71473	-1.872	0.27766	-0.23359
16	0.86293	-14.539	0.25491	-0.21233
17	1.00348	-31.007	0.21833	-0.15116
18	1.13591	-46.939	0.16791	-0.03770
19	1.23993	-57.531	0.11973	0.10666

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT	AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0.00836		-1.52196	0.90476	43.955
2	0.0250	0.01398		-1.45291	0.83897	43.351
3	0.0500	0.01960		-1.38387	0.77420	42.966
4	0.0750	0.02525		-1.31482	0.71043	42.461
5	0.1000	0.03092		-1.24577	0.64792	41.821
6	0.1250	0.03662		-1.17672	0.58697	41.025
7	0.1500	0.04236		-1.10768	0.52788	40.063
8	0.1750	0.04810		-1.03863	0.47091	38.956
9	0.2000	0.05384		-0.96958	0.41630	37.701
10	0.2300	0.06065		-0.88673	0.35409	36.079
11	0.2600	0.06734		-0.80387	0.29556	34.378
12	0.2900	0.07383		-0.72101	0.24069	32.646
13	0.3200	0.08007		-0.63816	0.18934	30.920
14	0.3500	0.08598		-0.55530	0.14138	29.210
15	0.3800	0.09149		-0.47244	0.09664	27.522
16	0.4100	0.09652		-0.38959	0.05499	25.850
17	0.4400	0.10096		-0.30673	0.01633	24.171

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 SECTION NO 10 SECTION KK RHO 4.0000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA
18	0 4700	0.10475	-0.22387	-0.01941	22.493
19	0 5000	0.10779	-0.14102	-0.05232	20.841
20	0 5300	0.11002	-0.05816	-0.08253	19.276
21	0 5600	0.11139	0.02470	-0.11017	17.676
22	0 5900	0.11188	0.10755	-0.13539	16.182
23	0 6200	0.11153	0.19041	-0.15824	14.654
24	0 6500	0.11041	0.27327	-0.17870	13.061
25	0 6800	0.10864	0.35612	-0.19661	11.308
26	0 7100	0.10636	0.43898	-0.21175	9.338
27	0 7400	0.10372	0.52184	-0.22364	6.904
28	0 7700	0.10085	0.60469	-0.23155	3.842
29	0 8000	0.09770	0.68755	-0.23418	-0.415
30	0 8300	0.09406	0.77040	-0.22964	-6.215
31	0 8600	0.08933	0.85326	-0.21489	-14.302
32	0 8900	0.08279	0.93612	-0.18632	-23.700
33	0 9200	0.07416	1.01897	-0.14141	-33.097
34	0 9500	0.06341	1.10183	-0.07459	-44.714
35	0 9700	0.05296	1.17088	0.00681	-53.560
36	1 0000	0.04165	1.23993	0.10666	-56.167

CHORD 2 8749 STAGGER 16.118 CAMBER 100.122

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPSILON	UPPER ALPHA	LOWER ALPHA	UPSILON
1	0 00836	-1.52196	0.90476	-1.52196	0.90476	0.90476
2	0 00836	-1.52559	0.89512	-1.51266	0.90878	0.90878
3	0 00836	-1.52234	0.88706	-1.50431	0.90588	0.90588
4	0 01398	-1.46671	0.82435	-1.43912	0.85358	0.85358
5	0 01960	-1.40307	0.75358	-1.36466	0.79482	0.79482
6	0 02525	-1.33932	0.68366	-1.29032	0.73720	0.73720
7	0 03092	-1.27541	0.61480	-1.21614	0.68105	0.68105
8	0 03662	-1.21128	0.54725	-1.14217	0.62669	0.62669
9	0 04236	-1.14686	0.48128	-1.06849	0.57447	0.57447
10	0 04810	-1.08210	0.41714	-0.99516	0.52468	0.52468
11	0 05384	-1.01691	0.35507	-0.92226	0.47753	0.47753
12	0 06065	-0.93807	0.28363	-0.83539	0.42455	0.42455
13	0 06734	-0.85852	0.21567	-0.74922	0.37544	0.37544
14	0 07383	-0.77826	0.15132	-0.66376	0.33005	0.33005

PHASE IV ROTOR

ZPC

COORD SYSTEM ORIGIN Z -7.02590 R O MU O. EIA O.
SECTION NO 10 SECTION KK RHO 4.0000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PI	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0 08007	-0.69730	0.09060	-0.57901	0.28808
16	0 08598	-0.61562	0.03350	-0.49498	0.24926
17	0 09149	-0.53321	-0.01999	-0.41167	0.21328
18	0 09652	-0.45008	-0.06986	-0.32910	0.17985
19	0 10096	-0.36616	-0.11608	-0.24731	0.14874
20	0 10475	-0.28148	-0.15852	-0.16627	0.11971
21	0 10779	-0.19614	-0.19712	-0.08589	0.09248
22	0 11002	-0.11024	-0.23185	-0.00508	0.06679
23	0 11139	-0.02392	-0.26272	0.07331	0.04239
24	0 11188	0.06273	-0.28984	0.15237	0.01907
25	0 11153	0.14985	-0.31335	0.23097	-0.00314
26	0 11041	0.23740	-0.33331	0.30913	-0.02409
27	0 10864	0.32550	-0.34975	0.38674	-0.04348
28	0 10636	0.41417	-0.36261	0.46379	-0.06089
29	0 10372	0.50391	-0.37164	0.53976	-0.07563
30	0 10085	0.59498	-0.37618	0.61441	-0.08691
31	0 09770	0.68857	-0.37462	0.68653	0.09374
32	0 09406	0.78504	-0.36405	0.75577	-0.09524
33	0 08933	0.88498	-0.33931	0.82154	-0.09046
34	0 08279	0.98395	-0.29529	0.88828	-0.07735
35	0 07416	1.07719	-0.23072	0.96076	-0.05210
36	0 06341	1.16596	-0.13936	1.03770	-0.00982
37	0 05296	1.23212	-0.03840	1.10964	0.05203
38	0 04165	1.26268	0.01868	1.15062	0.09570
39	0 04165	1.26971	0.05756	1.19344	0.11790
40	0 04165	1.23993	0.10666	1.23993	0.10666

LE RAD 0 01308 CENTER AT ALPHA -1.51253 UPSILON 0.89570
TE RAD 0 06858 CENTER AT ALPHA 1.20158 UPSILON 0.04981

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z	-7.03590	R	O.	MU	O.	ETA	O.
STAGE	4.	ROTOR					
					NB	20	
SECTION NO	10	SECTION	KK		RHO	4.0000	
CHORD	2.8749	STAGGER			CAMBER		
		16.118			100	122	
AREA	O 699880	SURFACE ARC LENGTH			6.56806		
SECTION C.G.		ALPHA			UPSILON		
SURFACE		O.01136			O.00566		
BLADE AXIS		-O.02420			-O.02728		
STACKING AXIS (RADIAL)		-O 02420			-O.02728		
		-O.00220			O.		

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 STAGE 4. ROTOR NB 20
 SECTION NO 11 SECTION LL 240 3.5000

MEANLINE INPUT DATA

PT	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.49758	41.792	0.07987	0.78332
2	-1.42164	41.071	0.05117	0.71576
3	-1.27107	39.284	0.09458	0.58721
4	1.12208	36.896	0.13753	0.46933
5	0.97445	34.059	0.17798	0.36388
6	0.81378	30.908	0.21785	0.26199
7	-0.64055	27.587	0.25468	0.16562
8	-0.46943	24.227	0.28418	0.08316
9	0.30060	20.890	0.30635	0.01382
10	0.13437	17.869	0.32163	-0.04375
11	0.02873	15.214	0.33107	-0.09149
12	0.18818	12.407	0.33619	-0.13044
13	0.34327	8.511	0.33873	-0.15912
14	0.49288	1.914	0.33996	-0.17283
15	0.63619	-9.901	0.33781	-0.16200
16	0.77151	-26.756	0.32290	-0.11284
17	0.89757	-44.077	0.28446	-0.01151
18	1.01427	-57.851	0.22569	0.15552
19	1.10463	-66.003	0.16790	0.35647

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0	0.01133	-1.49758	0.78332	41.792
2	0.0250	0.01824	-1.43252	0.72537	41.492
3	0.0500	0.02527	-1.36747	0.66855	40.760
4	0.0750	0.03241	-1.30241	0.61326	39.942
5	0.1000	0.03958	-1.23736	0.55964	39.029
6	0.1250	0.04672	-1.17230	0.50787	37.962
7	0.1500	0.05374	-1.10725	0.45821	36.724
8	0.1750	0.06060	-1.04219	0.41082	35.412
9	0.2000	0.06723	-0.97714	0.36569	34.071
10	0.2300	0.07482	-0.89907	0.31448	32.464
11	0.2600	0.08197	-0.82101	0.26630	30.906
12	0.2900	0.08863	-0.74294	0.22096	29.383
13	0.3200	0.09478	-0.66487	0.17835	27.868
14	0.3500	0.10038	-0.58681	0.13838	26.353
15	0.3800	0.10543	-0.50874	0.10100	24.806
16	0.4100	0.10993	-0.43067	0.06621	23.232
17	0.4400	0.11386	-0.35261	0.03395	21.672

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PHASE IV ROTOR

STAGE 4. ROTOR NB 20
COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
SECTION NO 11 SECTION LL RHO 3.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
18	0.4700	0.11724	-0.27454	0.00413	20.143
19	0.5000	0.12008	0.19647	-0.02338	18.700
20	0.5300	0.12240	-0.11841	-0.04878	17.363
21	0.5600	0.12426	-0.04034	-0.07225	16.102
22	0.5900	0.12569	0.03772	-0.09389	14.903
23	0.6200	0.12677	0.11579	-0.11376	13.626
24	0.6500	0.12754	0.19386	-0.13167	12.178
25	0.6800	0.12809	0.27192	-0.14730	10.392
26	0.7100	0.12848	0.34999	-0.16009	8.131
27	0.7400	0.12878	0.42806	-0.16918	4.945
28	0.7700	0.12893	0.50612	-0.17304	0.486
29	0.8000	0.12873	0.58419	-0.16965	-5.798
30	0.8300	0.12757	0.66225	-0.15619	-14.081
31	0.8600	0.12451	0.74032	-0.12883	-24.783
32	0.8900	0.11820	0.81839	-0.08240	-36.370
33	0.9200	0.10805	0.89645	-0.01269	-46.573
34	0.9500	0.09409	0.97452	0.08696	-57.130
35	0.9750	0.07972	1.03958	0.20696	-64.936
36	1.0000	0.06367	1.10463	0.35647	-67.195

CHORD 2 6.370
STAGER 9.315
CAMBER 108.987

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0.01133	-1.49758	0.78332	-1.49758	0.78332
2	0.01133	-1.50177	0.77109	-1.48614	0.78880
3	0.01133	-1.49751	0.76113	-1.47553	0.78569
4	0.01824	-1.44846	0.70736	-1.41659	0.74338
5	0.02527	-1.38922	0.64331	-1.34571	0.69378
6	0.03241	-1.32985	0.58050	-1.27498	0.64602
7	0.03958	-1.27022	0.51910	-1.20449	0.60018
8	0.04672	-1.21019	0.45931	-1.13441	0.55644
9	0.05374	-1.14962	0.40141	-1.06488	0.51500
10	0.06060	-1.08849	0.34570	-0.99590	0.47593
11	0.06723	-1.02679	0.29227	-0.92748	0.43912
12	0.07482	-0.95203	0.23124	-0.84612	0.39772
13	0.08197	-0.87652	0.17356	-0.76549	0.35903
14	0.08863	-0.80028	0.11913	-0.68560	0.32279

PHASE IV ROTOR

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COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.

SECTION NO 11 SECTION LL RHO 3.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	UPPER ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0 09478	-0.72328	0.06788	-0.60646	0.28882
16	0 10038	-0.64556	0.01978	-0.52805	0.25697
17	0 10543	-0.56706	-0.02519	-0.45042	0.22719
18	0 10993	-0.48785	-0.06698	-0.37350	0.19940
19	0 11386	-0.40805	-0.10557	-0.29717	0.17346
20	0 11724	-0.32777	-0.14100	-0.22131	0.14926
21	0 12008	-0.24723	-0.17335	-0.14572	0.12658
22	0 12240	-0.16657	-0.20282	-0.07025	0.10525
23	0 12426	-0.08578	-0.22965	0.00510	0.08516
24	0 12569	-0.00490	-0.25405	0.08035	0.06626
25	0 12677	0.07641	-0.27620	0.15517	0.04867
26	0 12754	0.15838	-0.29604	0.22933	0.03271
27	0 12809	0.24146	-0.31341	0.30239	0.01881
28	0 12848	0.32603	-0.32779	0.37395	0.00761
29	0 12878	0.41342	-0.33835	0.44269	-0.00002
30	0 12893	0.50468	-0.34303	0.50757	-0.00305
31	0 12873	0.60133	-0.33851	0.56704	-0.00079
32	0 12757	0.70318	-0.31934	0.62133	0.00695
33	0 12451	0.80914	-0.27788	0.67150	0.02023
34	0 11820	0.91081	-0.20789	0.72597	0.04310
35	0 10805	0.99991	-0.11062	0.79239	0.08524
36	0 09409	1.07871	0.01963	0.87033	0.15428
37	0 07972	1.13478	0.16243	0.94437	0.25148
38	0 06367	1.15910	0.24184	0.98474	0.31712
39	0 06367	1.15804	0.29838	1.03667	0.35914
40	0 06367	1.10463	0.35647	1.10463	0.35647
LE RAD	0 01656	CENTER AT ALPHA	-1.48524	UPSILON	0.77227
IF RAD	0 09572	CENTER AT ALPHA	1.06714	UPSILON	0.26840

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PHASE IV ROTOR

COND SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.

SECTION NO 11 SECTION LL RHO 3.5000

CHORD 2 6370 STAGGER 9.315 CAMBER 108.987

AREA 0.766645 SURFACE ARC LENGTH 6.39471

SECTION C.G. ALPHA UPSILON
 STREAMSURFACE SECTION C.G. 0.03076 0.04001
 BLADE AXIS -0.00152 -0.01220
 STACKING AXIS (RADIAL) -0.00152 -0.01220
 0.

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R 0. MU 0. ETA 0.

SECTION NO 12 SECTION MM RHO 3.0000

MEANLINE INPUT DATA

PT	ALPHA	ZETA	THICKNESS	UPSILON
1	-1.48278	38.375	0.04053	0.68854
2	-1.40890	37.427	0.06289	0.63160
3	-1.26267	35.432	0.10589	0.52511
4	-1.11822	33.324	0.14561	0.42796
5	0.97544	31.209	0.18137	0.33938
6	-0.82018	28.755	0.21602	0.25095
7	-0.65298	25.551	0.24870	0.16574
8	-0.48802	21.974	0.27650	0.09347
9	0.32562	18.575	0.30002	0.03376
10	0.16635	15.937	0.31988	-0.01562
11	-0.01070	13.717	0.33722	-0.05703
12	0.14056	10.984	0.35342	-0.09052
13	0.28653	6.582	0.36959	-0.11323
14	0.42571	-1.960	0.38600	-0.11785
15	0.55764	-17.558	0.39798	-0.09040
16	0.68010	-36.834	0.39089	-0.01336
17	0.79166	-53.175	0.35059	0.12813
18	0.89263	-64.664	0.28346	0.34874
19	0.96934	-71.103	0.21607	0.60629

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA
1	0	0.01652	-1.48278	0.68854	38.375
2	0.0250	0.02409	-1.42148	0.64112	37.177
3	0.0500	0.03157	-1.36018	0.59527	36.408
4	0.0750	0.03891	-1.29888	0.55074	35.563
5	0.1000	0.04606	-1.23757	0.50765	34.630
6	0.1250	0.05300	-1.17627	0.46605	33.699
7	0.1500	0.05970	-1.11497	0.42586	32.792
8	0.1750	0.06613	-1.05366	0.38704	31.906
9	0.2000	0.07228	-0.99236	0.34951	31.036
10	0.2300	0.07928	-0.91880	0.30615	29.985
11	0.2600	0.08588	-0.84523	0.26465	28.865
12	0.2900	0.09211	-0.77167	0.22508	27.655
13	0.3200	0.09796	-0.69811	0.18761	26.303
14	0.3500	0.10344	-0.62454	0.15242	24.805
15	0.3800	0.10857	-0.55098	0.11962	23.244
16	0.4100	0.11337	-0.47742	0.08923	21.643
17	0.4400	0.11785	-0.40385	0.06120	20.096

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. EIA O
SECTION NO 12 SECTION MM RH0 3.0000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
18	0.4700	0.12203	-0.33029	0.03533	18.665
19	0.5000	0.12592	-0.25672	0.01142	17.370
20	0.5300	0.12957	-0.18316	-0.01077	16.231
21	0.5600	0.13302	-0.10960	-0.03147	15.200
22	0.5900	0.13633	-0.03603	-0.05074	14.148
23	0.6200	0.13955	0.03753	-0.06853	13.016
24	0.6500	0.14276	0.11109	-0.08463	11.621
25	0.6800	0.14599	0.18466	-0.09865	9.855
26	0.7100	0.14932	0.25822	-0.10987	7.354
27	0.7400	0.15280	0.33178	-0.11724	3.815
28	0.7700	0.15635	0.40535	-0.11880	-1.736
29	0.8000	0.15974	0.47891	-0.11178	-9.640
30	0.8300	0.16211	0.55248	-0.09235	-20.233
31	0.8600	0.16212	0.62604	-0.05560	-32.968
32	0.8900	0.15751	0.69960	0.00575	-46.031
33	0.9200	0.14663	0.77317	0.09898	-56.501
34	0.9500	0.12942	0.84673	0.23245	-65.546
35	0.9750	0.11034	0.90803	0.39542	-72.387
36	1.0000	0.08807	0.96934	0.60629	-74.413

CHORD 2.4535
STAGGER 1.921
CAMBER 112.788

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0.01652	-1.48278	0.68854	-1.48278	0.68854
2	0.01652	-1.48744	0.67139	-1.46783	0.69709
3	0.01652	-1.48088	0.65824	-1.45303	0.69401
4	0.02409	-1.43934	0.61758	-1.40363	0.66466
5	0.03157	-1.38316	0.56410	-1.33719	0.62643
6	0.03891	-1.32663	0.51191	-1.27112	0.58956
7	0.04606	-1.26969	0.46115	-1.20546	0.55415
8	0.05300	-1.21135	0.41195	-1.14019	0.52014
9	0.05970	-1.15463	0.36430	-1.07530	0.48743
10	0.06613	-1.09654	0.31817	-1.01079	0.45590
11	0.07228	-1.03807	0.27354	-0.94665	0.42548
12	0.07928	-0.96740	0.22191	-0.87019	0.39039
13	0.08588	-0.89609	0.17238	-0.79437	0.35691
14	0.09211	-0.82411	0.12500	-0.71923	0.32517

PHASE IV ROTOR

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COORD SYSTEM ORIGIN Z -7.03590 R O. MU O ETA O.
SECTION NO 12 SECTION MM RHO 3.0000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	UPPER		LOWER	
		ALPHA	UPSILON	ALPHA	UPSILON
15	0.09796	-0.75135	0.07989	-0.64186	0.29534
16	0.10344	-0.67778	0.03723	-0.57130	0.26761
17	0.10857	-0.60354	-0.00276	-0.49842	0.24201
18	0.11337	-0.52871	-0.04004	-0.42612	0.21850
19	0.11785	-0.45352	-0.07457	-0.35418	0.19697
20	0.12203	-0.37820	-0.10649	-0.28238	0.17716
21	0.12592	-0.30284	-0.13601	-0.21061	0.15885
22	0.12957	-0.22759	-0.16339	-0.13873	0.14185
23	0.13302	-0.15238	-0.18894	-0.06681	0.12501
24	0.13633	-0.07691	-0.21290	0.00484	0.11143
25	0.13955	-0.00103	-0.23533	0.07609	0.09827
26	0.14276	0.07582	-0.25617	0.14637	0.08691
27	0.14599	0.15400	-0.27510	0.21531	0.07781
28	0.14932	0.23477	-0.29153	0.28167	0.07180
29	0.15280	0.31931	-0.30427	0.34426	0.06979
30	0.15635	0.41116	-0.31052	0.39954	0.07292
31	0.15974	0.51173	-0.30497	0.44610	0.08141
32	0.16211	0.62125	-0.27895	0.48370	0.09425
33	0.16212	0.73426	-0.22245	0.51781	0.11126
34	0.15751	0.83867	-0.12840	0.56054	0.13991
35	0.14663	0.92316	-0.00030	0.62317	0.19826
36	0.12942	0.99126	0.16673	0.70220	0.29818
37	0.11034	1.03705	0.35446	0.77902	0.43638
38	0.08807	1.05686	0.46943	0.82335	0.53629
39	0.08807	1.04591	0.54234	0.88151	0.59810
40	0.08807	0.96934	0.60629	0.96934	0.60629
LE RAD 0.02283 CENTER AT ALPHA -1 46482 UPSILON 0.67446					
TF RAD 0.12235 CENTER AT ALPHA 0 93601 UPSILON 0.48856					

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PHASE IV ROTOR

COORD SYSTEM ORIGIN	Z	-7.03590	R	O.	MU	O.	ETA	O.
STAGE	4.	ROTOR			NB	20		
SECTION NO	12	SECTION MM			RHO	3.0000		
CHORD	2.4535	STAGGER			CAMBER	112.788		
		1.921						
AREA	0.825787	SURFACE ARC LENGTH				6.33790		
SECTION C.G.		ALPHA			UPSILON			
STREAMSURFACE		0.07163			0.09684			
BLADE AXIS		SECTION C.G.			0.04746	-0.00208		
STACKING AXIS (RADIAL)		0.04746			-0.00208			
		-0.00220			O.			

PHASE IV ROTOR

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COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 SECTION NO 13 SECTION NN RHO 2.5000

MEANLINE INPUT DATA

PT	ALPHA	ZETA*	THICKNESS	UPSILON
1	-1.46882	33.562	0.05425	0.61515
2	-1.39730	32.688	0.07405	0.56913
3	-1.25552	31.044	0.11166	0.48240
4	-1.11563	29.700	0.14623	0.40131
5	-0.97756	28.602	0.17755	0.32448
6	-0.82745	26.838	0.20863	0.24504
7	0.66594	23.586	0.23936	0.16815
8	0.50689	19.689	0.26725	0.10468
9	0.35076	16.206	0.29321	0.05397
10	0.19835	13.969	0.31808	0.01253
11	0.05013	12.201	0.34336	-0.02258
12	0.09293	9.546	0.37065	-0.05060
13	0.22978	4.638	0.40044	-0.06734
14	0.35853	-5.816	0.43204	-0.06288
15	0.47909	-24.620	0.45815	-0.01881
16	0.58868	-44.823	0.45888	0.08613
17	0.68575	-59.575	0.41672	0.26778
18	0.77100	-69.205	0.34123	0.54196
19	0.83404	-74.459	0.26425	0.85610

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
1	0.	0.02343	-1.46882	0.61515	32.937
2	0.0250	0.03032	-1.41125	0.57802	32.585
3	0.0500	0.03709	-1.35368	0.54180	31.765
4	0.0750	0.04368	-1.29611	0.50665	31.067
5	0.1000	0.05010	-1.23854	0.47235	30.520
6	0.1250	0.05633	-1.18097	0.43874	30.047
7	0.1500	0.06236	-1.12339	0.40573	29.623
8	0.1750	0.06817	-1.06582	0.37325	29.229
9	0.2000	0.07378	-1.00825	0.34130	28.831
10	0.2300	0.08023	-0.93916	0.30366	28.308
11	0.2600	0.08641	-0.87008	0.26700	27.547
12	0.2900	0.09236	-0.80099	0.23172	26.512
13	0.3200	0.09809	-0.73191	0.19820	25.214
14	0.3500	0.10362	-0.66282	0.16678	23.642
15	0.3800	0.10895	-0.59373	0.13775	21.932
16	0.4100	0.11412	-0.52465	0.11113	20.208
17	0.4400	0.11916	-0.45556	0.08686	18.533

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PHASE IV ROTOR

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 SECTION NO 13 SECTION NN RHO 2.5000

MEANLINE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	PCT AL	T/C	ALPHA	UPSILON	ZETA*
18	0.4700	0.12410	-0.38648	0.06471	17.065
19	0.5000	0.12898	-0.31739	0.04434	15.823
20	0.5300	0.13384	-0.24830	0.02545	14.802
21	0.5600	0.13874	0.17922	0.00773	13.995
22	0.5900	0.14376	-0.11013	-0.00898	13.171
23	0.6200	0.14900	-0.04105	-0.02456	12.238
24	0.6500	0.15455	0.02804	-0.03882	11.017
25	0.6800	0.16044	0.09712	-0.05130	9.392
26	0.7100	0.16674	0.16621	-0.06134	6.949
27	0.7400	0.17350	0.23530	-0.06768	3.338
28	0.7700	0.18075	0.30438	-0.06844	-2.609
29	0.8000	0.18820	0.37347	-0.06011	-11.623
30	0.8300	0.19505	0.44255	-0.03809	-24.098
31	0.8600	0.19958	0.51164	0.00395	-38.380
32	0.8900	0.19880	0.58073	0.07544	-52.607
33	0.9200	0.18902	0.64981	0.18869	-63.383
34	0.9500	0.16920	0.71890	0.35586	-71.247
35	0.9750	0.14472	0.77647	0.56599	-77.401
36	1.0000	0.11412	0.83404	0.85610	-79.357

CHORD 2 3154
 STAGGER -5.973
 CAMBER 112.295

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	I/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
1	0.02343	-1.46882	0.61515	-1.46882	0.61515
2	0.02343	-1.47299	0.59187	-1.44979	0.62832
3	0.02343	-1.46266	0.57505	-1.42980	0.62590
4	0.03032	-1.43016	0.54844	-1.39235	0.60760
5	0.03709	-1.37629	0.50529	-1.33107	0.57831
6	0.04368	-1.32221	0.46333	-1.27001	0.54997
7	0.05010	-1.26799	0.42239	-1.20908	0.52232
8	0.05637	-1.21362	0.38229	-1.14831	0.49519
9	0.06236	-1.15908	0.34297	-1.08771	0.46848
10	0.06817	-1.10436	0.30438	-1.02728	0.44213
11	0.07378	-1.04944	0.26647	-0.96706	0.41612
12	0.08023	-0.98321	0.22188	-0.89512	0.38544
13	0.08641	-0.91634	0.17831	-0.82381	0.35570
14	0.09236	-0.84872	0.13604	-0.75326	0.32740

PHASE IV ROTOR

•ZPC•

COORD SYSTEM ORIGIN Z -7.03590 R O. MU O. ETA O.
 SECTION NO 13 SECTION NN RHO 2.5000

SURFACE COORDINATES WITH ORIGIN AT SECTION AXIS

PT	T/C	ALPHA	UPPER UPSILON	LOWER ALPHA	UPSILON
15	0 09809	-0.78028	0.09545	-0.68353	0.30094
16	0 10362	-0.71093	0.05689	-0.61471	0.27667
17	0 10895	-0.64085	0.02075	-0.54662	0.25476
18	0 11412	-0.57028	-0.01285	-0.47901	0.23511
19	0 11916	-0.49941	-0.04393	-0.41172	0.21766
20	0 12410	-0.42864	-0.07264	-0.34432	0.20206
21	0 12898	-0.35811	-0.09933	-0.27668	0.18800
22	0 13384	-0.28789	-0.12436	-0.20872	0.17525
23	0 13874	-0.21806	-0.14812	-0.14038	0.16358
24	0 14376	-0.14805	-0.17103	-0.07221	0.15308
25	0 14900	-0.07761	-0.19314	-0.00448	0.14402
26	0 15455	-0.00615	-0.21445	0.06223	0.13680
27	0 16044	0.06681	-0.23456	0.12744	0.13196
28	0 16674	0.14286	-0.25295	0.18956	0.13028
29	0 17350	0.22360	-0.26821	0.24699	0.13285
30	0 18075	0.31391	-0.27749	0.29486	0.14060
31	0 18820	0.41736	-0.27352	0.32957	0.15330
32	0 19505	0.53475	-0.24422	0.35035	0.16805
33	0 19958	0.65510	-0.17718	0.36818	0.18507
34	0 19880	0.76358	-0.06433	0.39787	0.21520
35	0 18902	0.84546	0.09064	0.45417	0.28673
36	0 16920	0.90439	0.29288	0.53341	0.41884
37	0 14472	0.93998	0.52945	0.61296	0.60254
38	0 11412	0.95438	0.69939	0.66467	0.75523
39	0 11412	0.93299	0.78762	0.72766	0.83626
40	0 11412	0.83404	0.85610	0.83404	0.85610
LE RAD	0 03048	CENTER AT ALPHA	-1.44326	UPSILON	0.59855
TE RAD	0 14855	CENTER AT ALPHA	0.80622	UPSILON	0.71018

•ZPC•

PHASE IV ROTOR

COORD SYSTEM ORIGIN Z	-7.03590	R	O.	MU	O.	ETA	O.
STAGE	4.	ROTOR					
					NB	20	
SECTION NO 12	SECTION NN				RHO	2.5000	
CHORD	STAGGER				CAMBER		
2.3154	-5.973				112.295		
AREA	0.901998	SURFACE ARC LENGTH	6.36995				
SECTION C.G.		ALPHA	UPSILON				
SURFACE	SECTION C.G.	0.10801	0.17811				
BLADE AXIS		0.09643	0.00804				
STACKING AXIS (RADIAL)		0.09643	0.00804				
		-0.00220	0.				

PHASE IV ROTOR

ZPC

SFCT	NO	STAGE		4. ROTOR		NB		20	
		RH0	CHORD	STAGGER	CAMBER	TM C	ZETA1*	ZETA2*	
AA	1	8.50000	4.0427	61.30	-2.96	0.02390	57.44	60.40	
BB	2	8.00000	3.9874	56.44	1.96	0.02569	55.32	53.36	
CC	3	7.50000	3.9732	52.14	6.51	0.03047	53.70	47.20	
DD	4	7.00000	3.9560	48.25	11.50	0.03889	52.28	40.78	
EE	5	6.50000	3.9030	44.23	18.18	0.05072	51.22	33.04	
FF	6	6.00000	3.7722	38.88	29.01	0.06260	50.43	21.41	
GG	7	5.50000	3.6707	33.24	44.70	0.07219	49.19	4.49	
HH	8	5.00000	3.4580	27.11	65.17	0.08385	47.44	-17.73	
JJ	9	4.50000	3.1643	21.98	87.57	0.09510	45.68	-41.89	
KK	10	4.00000	2.8749	16.12	100.12	0.11188	43.95	-56.17	
LL	11	3.50000	2.6370	9.32	108.99	0.12893	41.79	-67.20	
MM	12	3.00000	2.4535	1.97	112.79	0.16212	38.38	-74.41	
NN	13	2.50000	2.3154	-5.97	112.29	0.19958	32.94	-79.36	

THE COORDINATES FOR THIS BLADE WERE PUT ON TAPE
IN THE SAME ORDER AS PRINTED ABOVE

SECTION XXI

CONCLUSIONS

The aerodynamic design of a series of five transonic compressor rotors was carried out under this contract. Each of the five designs is parametrically related to the baseline rotor documented in Technical Report AFAPL-TR-79-2078.

These rotors provide a matrix of aerodynamic designs that will help define the sensitivity of transonic blade rows to several design variables when tested in the future.

SECTION XXII

REFERENCES

1. A.J. Wennerstrom, and W.A. Buzzell, Redesign of a Rotor for a 1500 ft/sec Transonic, High-Through-Flow, Single-Stage Axial-Flow Compressor with Low Hub/Tip Ratio, Air Force Aero Propulsion Laboratory, Wright-Patterson AFB, Ohio 45433, AFAPL-TR-2078, September 1979.
2. George R. Frost, Richard M. Hearsey, Arthur J. Wennerstrom, A Computer Program for the Specification of Axial Compressor Airfoils, Aerospace Research Laboratories, Wright-Patterson Air Force Base, Ohio 45433, ARL 72-0171,
3. Richard M. Hearsey, A Revised Computer Program for Axial Compressor Design Volume I, Aerospace Research Laboratories, Wright-Patterson Air Force Base, Ohio 45433, ARL TF 75-0001, January 1975.
4. Arthur J. Wennerstrom, Personal Communication to L.H. Smith of General Electric Company, September 12, 1980.